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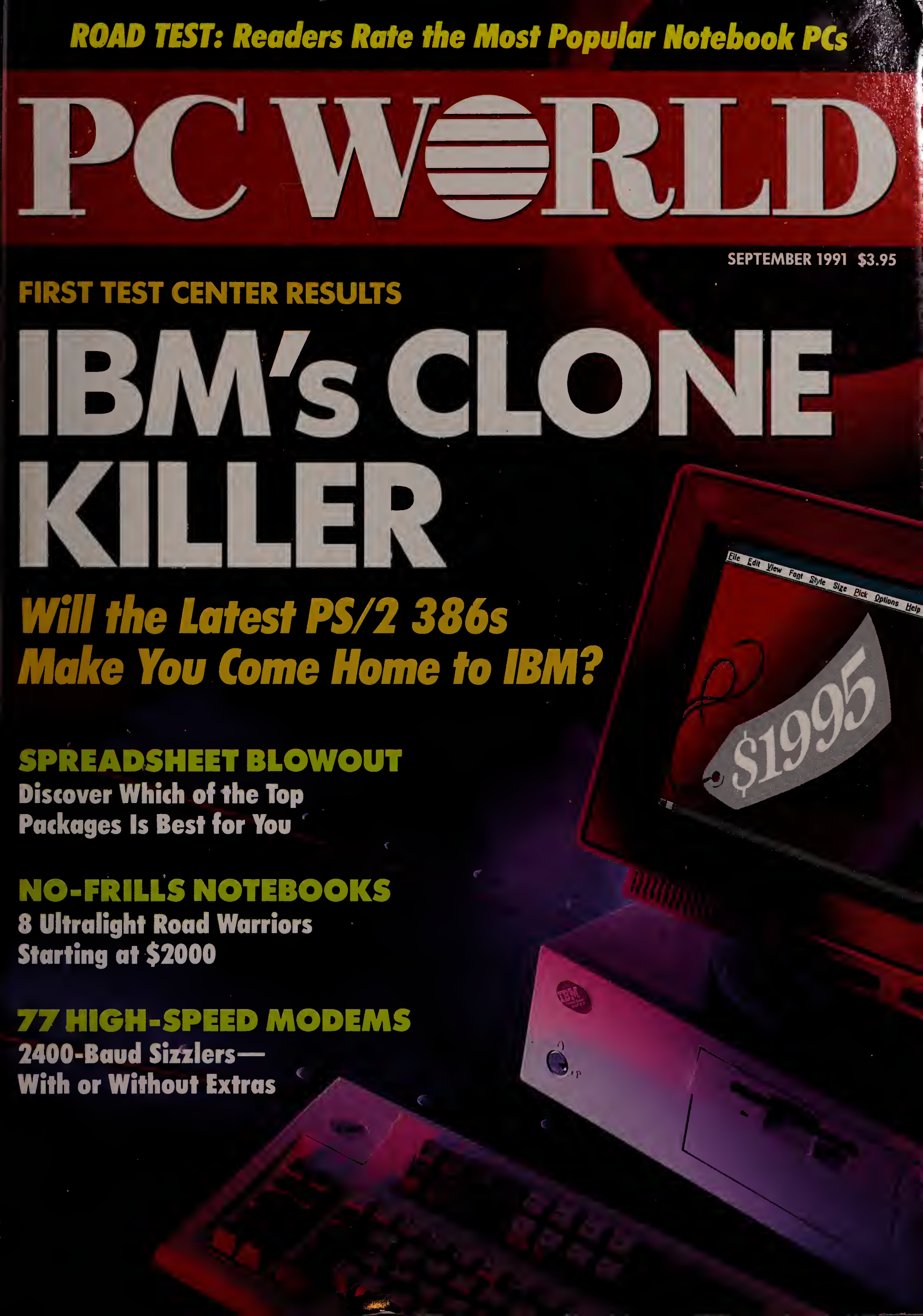

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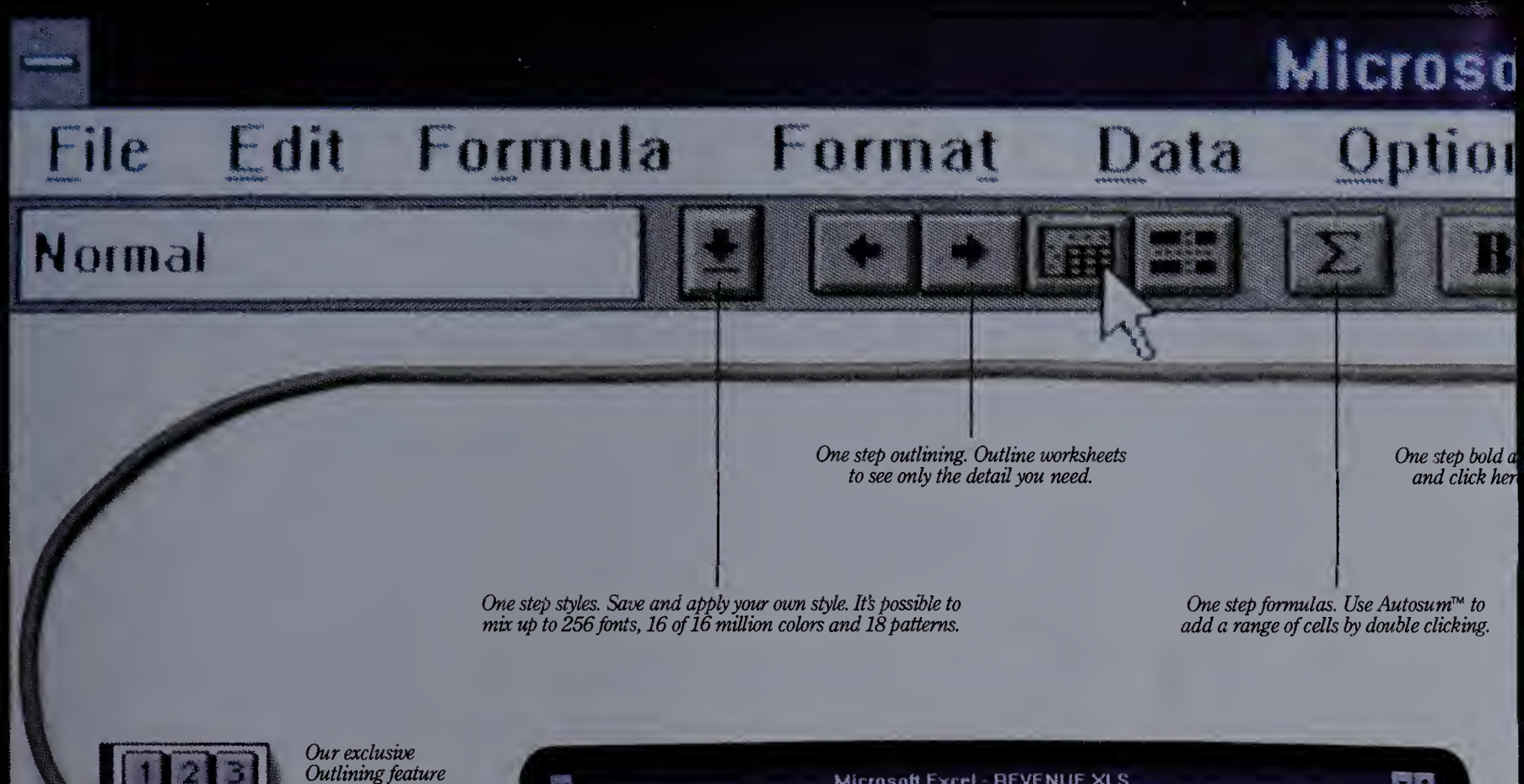

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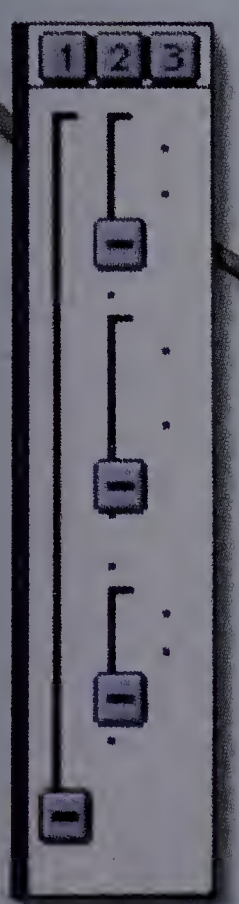

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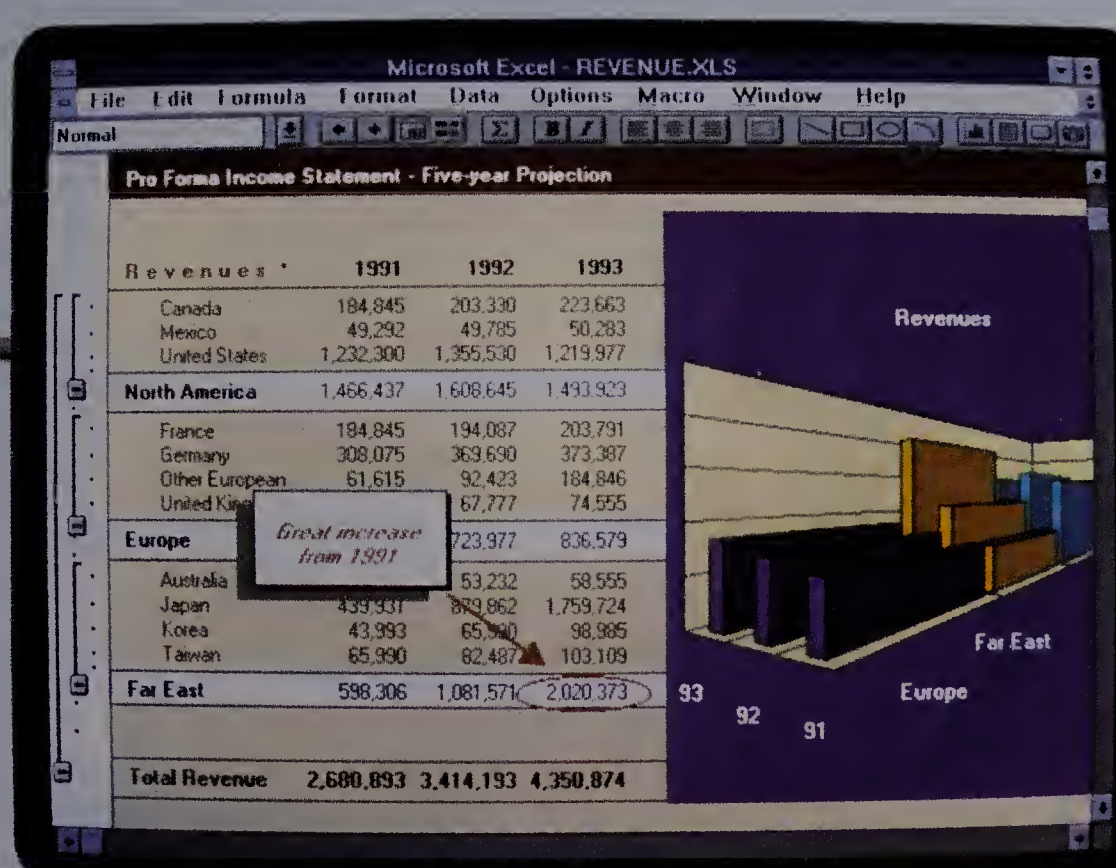

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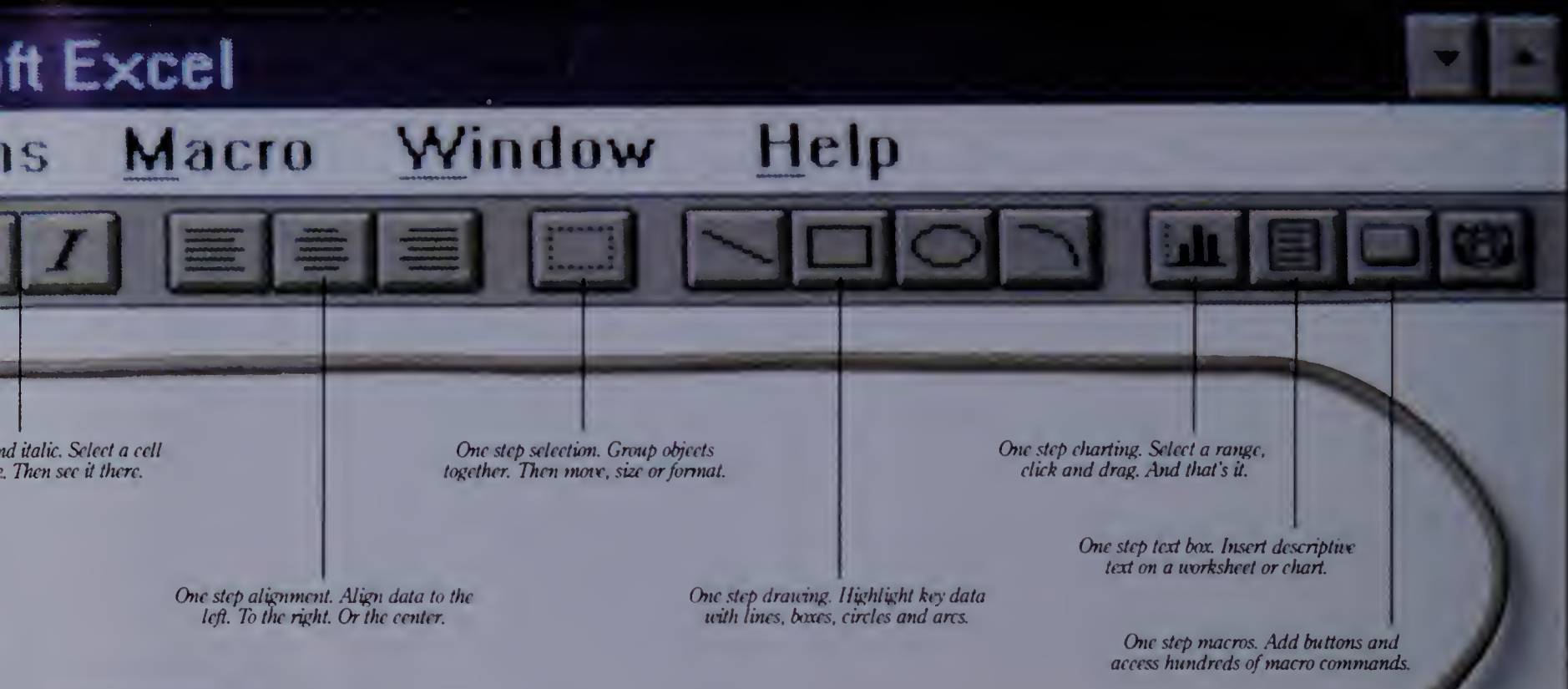

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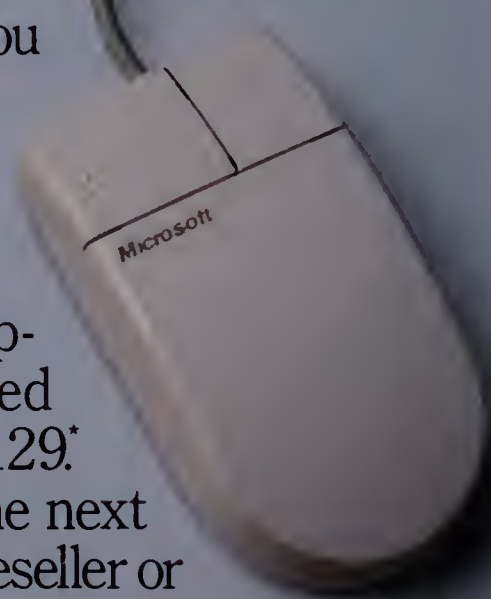

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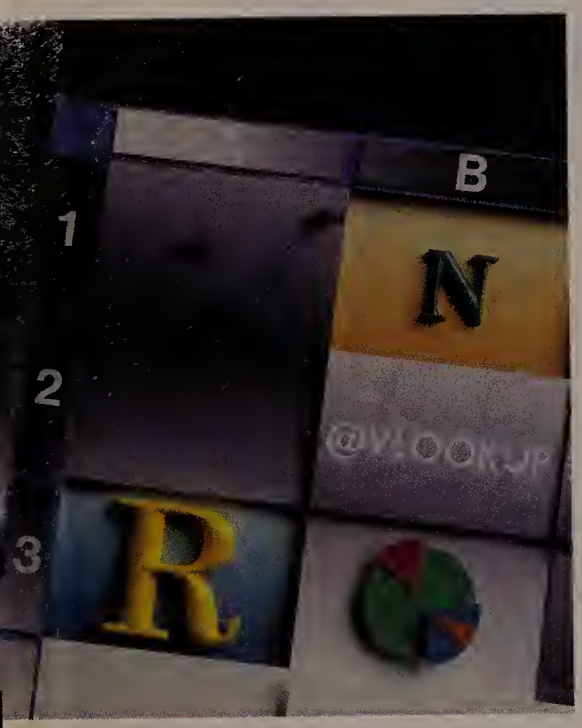

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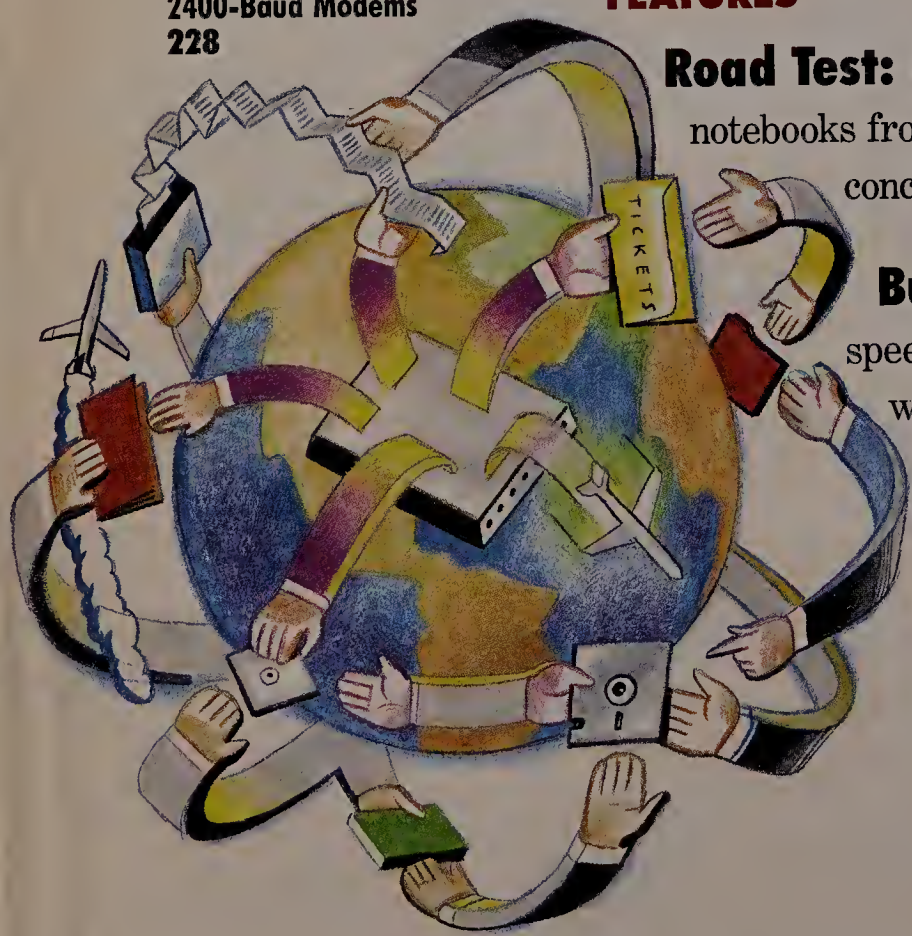

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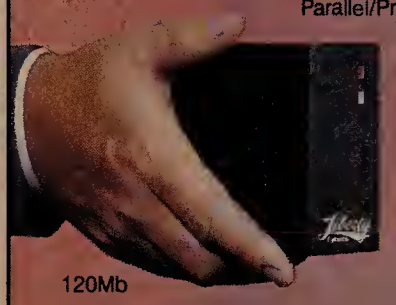

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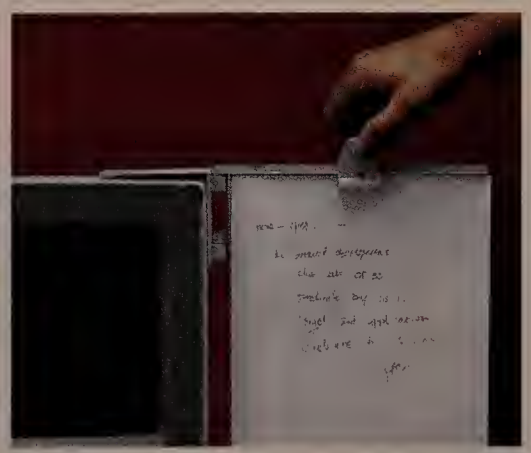

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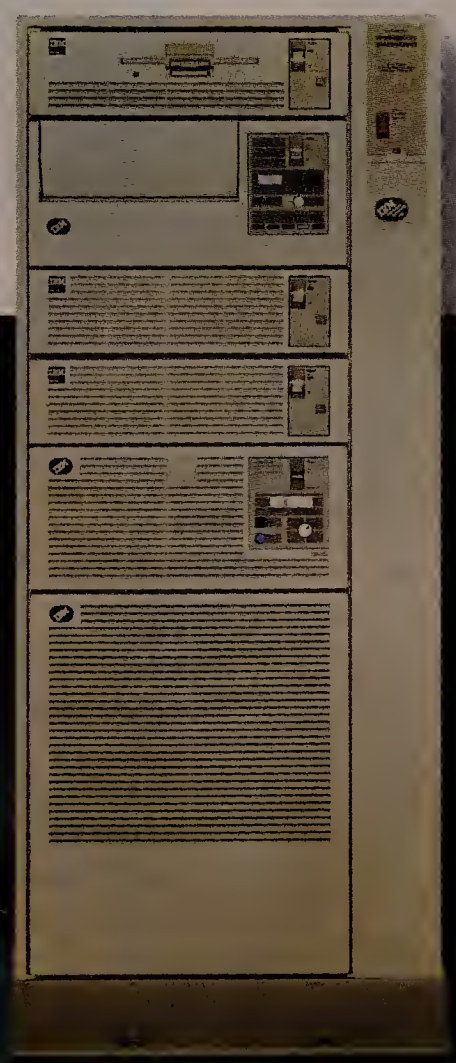

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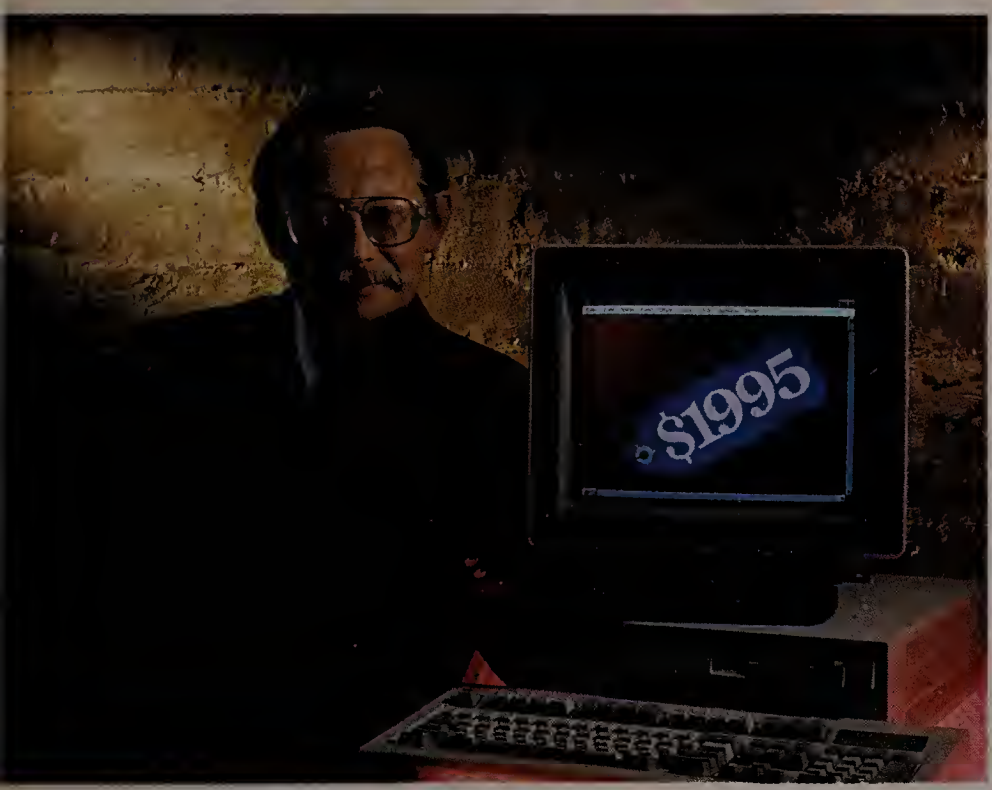

Contributing Editor Alan Kaplan ponders IBM's new PS/2 Model 35.

ROBERT CARDIN

IBM's Lukewarm Counterattack

Strange but true: PCs don't seem to break down much anymore. Occasionally a keyboard fails, a system loses its setup information, or a hard drive burps and sends our tech editor running for *The Norton Utilities.* But such glitches are rare, and the catastrophic system failures of yore appear to be almost extinct.

Indeed—with a few notorious exceptions—no brand of PC seems more or less prone to failure than another.

That kind of realization is dangerous for companies like IBM. Why pay top dollar for a PS/2 system when a cut-rate clone seems to do the job just as reliably?

As our cover story attests, IBM has responded to the clone challenge. Alan Kaplan, contributing editor and the story's author, believes IBM's best reply would have been a wave of exciting new technology. "Here was an opportunity to hop a generation," says Kaplan, "to introduce something dramatic."

Instead, IBM's first 20-MHz SX systems compete solely on price. PS/2 Models 35, 40, and 57 sell for less than you'd expect: The Model 35 starts at $1995. Compare this price tag, taking into account IBM's steep dealer discounts, with the base price for a 20-MHz SX from celebrated clone maker Gateway 2000, and the Model 35 may sell for $400 less than Gateway's unit.

Impressive, until you look closely. The Gateway system comes standard with 4MB RAM, an 80MB hard disk, a VGA monitor, a floppy drive, and one year's on-site service. With the Model 35, you get the floppy drive —period. Ask for the same fully loaded deal, and you could pay twice as much for the IBM as for the Gateway.

But what of the PS/2 line's vaunted reliability? "Let's assume, for argument's sake, that the IBM machine really *is* more reliable," says Kaplan. "You can buy two clones with the money you'd spend on one IBM, so if one clone burns up, you can throw it out the window, and you'll still be ahead." In short, the new pricing is good news for IBM loyalists, but unexciting for those who now view PCs as commodity items.

Some might exalt the technical advantages of the PS/2 line. However, not only do all three machines lack the handy snap-in drives of previous PS/2s, but the Model 35 and the Model 40 also reject the Micro Channel bus in favor of the old-fashioned AT bus. Why? Because many customers prefer AT expansion boards—Micro Channel boards cost more and don't offer the wide variety. And with few devices available that take full advantage of the Micro Channel's higher throughput, the benefits remain elusive.

The PS/2s offer only one new and noteworthy piece of technology: a 3½-inch 2.88MB floppy drive. Part and parcel of the Model 57 and an option with the others, this drive will undoubtedly set a new standard, one befitting users who need to transport large graphics-based files.

"People depend on IBM to set standards," says Kaplan, and aside from the 2.88MB floppy, these PS/2s clearly do not. Without significant new advances, manufacturers will continue to compete on price, which in the short term is good news for PC buyers. But someone needs to set tomorrow's standards—for erasable optical storage, photo-realistic graphics, and other technologies required by the next generation of multimedia PCs. As Kaplan puts it, IBM's "lukewarm counterattack" leaves us waiting for the other shoe to drop.

Eric Knorr
Editor

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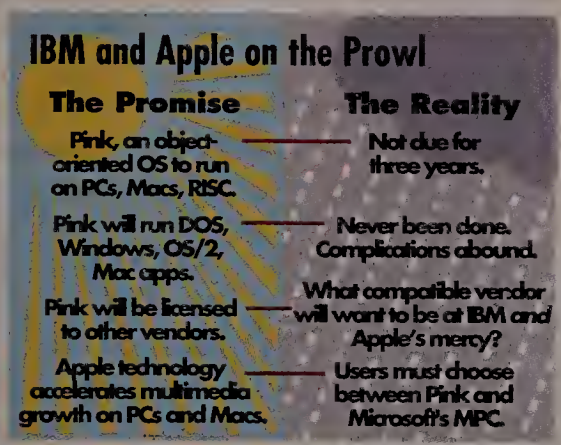
MIKE HOGAN

New OS Plan Unfolds

Will Users Get More or Fewer Choices?

Will IBM and Apple's joint venture let users run both DOS and Macintosh software, or is it a ploy to cut them off from low-price clones? A preliminary contract calls for the pair to build a cross-platform, object-oriented operating system based on Apple's next version of Mac system software (code-named Pink). Still years away, the environment will run today's DOS, *Windows*, OS/2, and Mac packages and be licensed by any vendor. Apple will build workstations based on IBM's RISC architecture, and the duo will work together on connectivity and multimedia projects.



The Apple-IBM venture promises more software and system choices but faces many obstacles.

Ostensibly, the deal ends Apple's self-imposed isolation from the DOS marketplace and gives it a better shot at corporate customers. Big Blue hopes to promote its RISC designs in the fast-growing workstation market and free itself from dependence upon Microsoft system software. The move "puts Microsoft and Intel on notice that there are alternatives," notes Computer Intelligence analyst Dan Ness.

The venture will eventually yield better software, predicts Yankee Group analyst Paul Zagaeski, but not without near-term standards confusion as the IBM-Microsoft-Intel alliance breaks up. "You'll see accelerating aggressiveness from all of the vendors concerned," he says. "There will be turmoil and confusion and end users screaming, 'You promised this.'"

Others ask if this isn't merely an attempt to parry the price assaults of other vendors and wonder if such old adversaries can collaborate. IBM's many recent software alliances are "an indication of corporate confusion," declares Jeff Silverstein, publisher of *Software Industry Bulletin*. "Here they go with what they hope will be an even better operating system than OS/2 2.0."

Borland to Keep A-T Products

Borland International, which offered $440 million in stock for Ashton-Tate in July, plans to sustain all Tate's lines and make *dBASE* one of a variety of front ends that its *Windows*-based offerings will be able to read in the future.

"We will continue to protect the DOS products," says Borland vice president Rob Dickerson, "and provide a migration path to *Paradox* by letting users access it through the language or reports, forms, or queries of their choosing."

Borland is perhaps particularly well-suited to this task because its object-oriented technology promises a high degree of file and language independence. The first examples should appear next year in *Paradox for Windows* and a dialect-independent interpreter/compiler code-named *Object dBASE*.

Users like Rock Blanco, vice president of information systems at Garber Travel Service in Boston, express relief and enthusiasm. A *dBASE* loyalist, Blanco's anxious for the long-awaited *dBASE* compiler to let him distribute applications more easily among his 900 travel agents and 500 corporate clients. Users and developers can have more faith in the *dBASE* standard now, says Michael Masterson, president of Masterson Consulting and founder of the Silicon Valley dBASE Language Group. "We now have a true language company with serious market clout to legitimize the *xBASE* [*dBASE*] standard."

To this Ashton-Tate adds strong dealer, VAR, and international sales channels and a healthy balance sheet with almost $100 million in cash, notes Charlotte Walker, analyst at Labe, Simpson & Company, and its products complement Borland's, especially its object-oriented SQL server from Interbase.

Microsoft-IBM Battle Splitting Users

Users and software developers will be forced to take sides in the software battle royal raging between Microsoft's *Windows* and IBM's OS/2. Microsoft hardened battle lines in July by breaking its promise to build OS/2 support into the first release of its next-generation 32-bit operating system, now dubbed *Windows NT*. That development closely followed a Microsoft memo in which Chair Bill Gates vowed to take steps to prevent customer defections from *Windows* to OS/2, the operating system his company touted for the past four years. Current OS/2 1.3 sales hardly threaten *Windows 3.0*'s 4 million–copy sales juggernaut, but OS/2 2.0, due this fall, could be a serious alternative for the Fortune 1000.

Microsoft abandoned support of 2.0 in January, angering IBM executives. Since then IBM has aggressively promoted OS/2 and courted new partners like Lotus and Borland. Demos of OS/2 2.0 have gotten major corporations like Price-Waterhouse to reevaluate their *Windows* plans, claims Joseph Guglielmi, IBM general manager. "There's certainly renewed interest among our corporate clients," confirms David Marshak of Patricia Seybold's Office Computing Group.

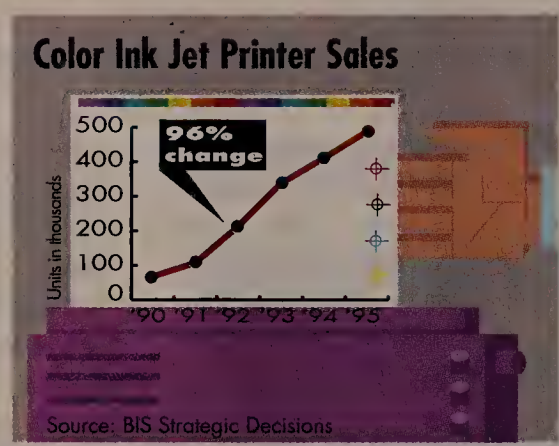
With its 32-bit architecture, memory protection, sophisticated multitasking, and ability to handle DOS and *Windows* apps, OS/2 2.0 is far more advanced than *Windows 3.0* or the upcoming *3.1*. Reliability is key for users who tire of seeing 'Unrecoverable Application Error' on their screens. Microsoft's answer, *Windows NT*, is at least a year away; its OS/2-compatible successor is even further out.

With only 4 percent of operating system sales, OS/2 has an uphill fight. "OS/2 2.0 is a great pitch, but they've got to get some applications," notes Michael Goulde of Open System Advisors.

GORDON STUDER

Color for "the Rest of Us"

Hewlett-Packard has introduced a new ink jet printer that is expected to expand the use of color beyond the realm of graphics-heavy applications and into everyday uses. HP's $1095 DeskWriter C for the Macintosh batters the price premium for color, offering laser-quality printing at a dot matrix price.



Color printer sales should jump next year as HP's cheap ink jet brings color to occasional users.

Currently, 300-dpi color printing is restricted to much more expensive devices such as the Textronix Phaser II SX thermal transfer, which lists for $5000. HP recently reduced prices $400 for its PaintJet for PCs and PaintWriter for Macs to $995 each, but they offer only 180-dpi resolution and are designed primarily for graphics uses.

HP puts the DeskWriter C in a new class—the color-capable monochrome printer. Research by BIS Strategic Decisions shows that most users want to print monochrome text 80 percent of the time and only need color, primarily for graphics, during the remaining 20 percent. The price, operating costs, and design of past color printers have restricted their use to formal publishing and presentations by graphics professionals and to work groups also served by monochrome workhorses.

The DeskWriter C comes equipped with a $20 black ink cartridge for volume text printing at 3 pages per minute. It can be swapped with a new $35 color cartridge for occasionally adding spot color to memos and spreadsheets at a slower 4 minutes per page. Unfortunately, the color cartridge prints black as a composite.

The new printer will help color ink jet sales nearly double next year to 215,000, predicts BIS vice president Peter Testan, who envisions expensive color printers being relegated to the graphics niche. "The major market growth is black-and-white with a color feature. When we have color lasers, they too will be primarily black-and-white devices with color added."

HP refused to discuss whether it plans to introduce a new color ink jet printer for PCs, but to date, its Mac products have PC counterparts.

Industry Leaders Offer New Benchmarks

Rather than test the performance of isolated system components, it makes more sense to compare PCs based on how they run the most popular applications, say Intel and other industry leaders. They plan to offer a set of low-cost, application-oriented benchmarks they maintain will let users compare how different PCs perform in the office more easily than the many low-level tests of CPU, disk, and I/O performance often used.

The companies—including IBM, Hewlett-Packard, Novell, and Microsoft, among others—have formed the nonprofit Business Applications Performance Corporation to assemble and distribute benchmarks on disk as well as publish test results in a newsletter. The first set of benchmarks for single-user, single-tasking PCs—based upon such market leaders as *1-2-3*, *dBASE IV*, and *WordPerfect*—should arrive this fall, followed by multitasking and network suites.

"This is really important," asserts Louis Giglio, vice president at Bear, Stearns & Co. "After all, what do 'Dryhstone' and 'Whetstone' mean to a business computer user?"

The benchmarks will cost little but require users to have a full set of the apps they employ—a prerequisite that could skew their usefulness toward larger PC users. Smaller shops can get results through a newsletter.

"We love the idea," says Suzanne Hackett, manager of performance management and information services at McDonnell-Douglas Aircraft in Long Beach, California. She saves worker hours by using test results from resellers and others to narrow the candidate pool for the 500 PCs her firm buys annually. "But with everyone testing things in so many ways, it's difficult to find a standard set of criteria."

More Battery Life Coming

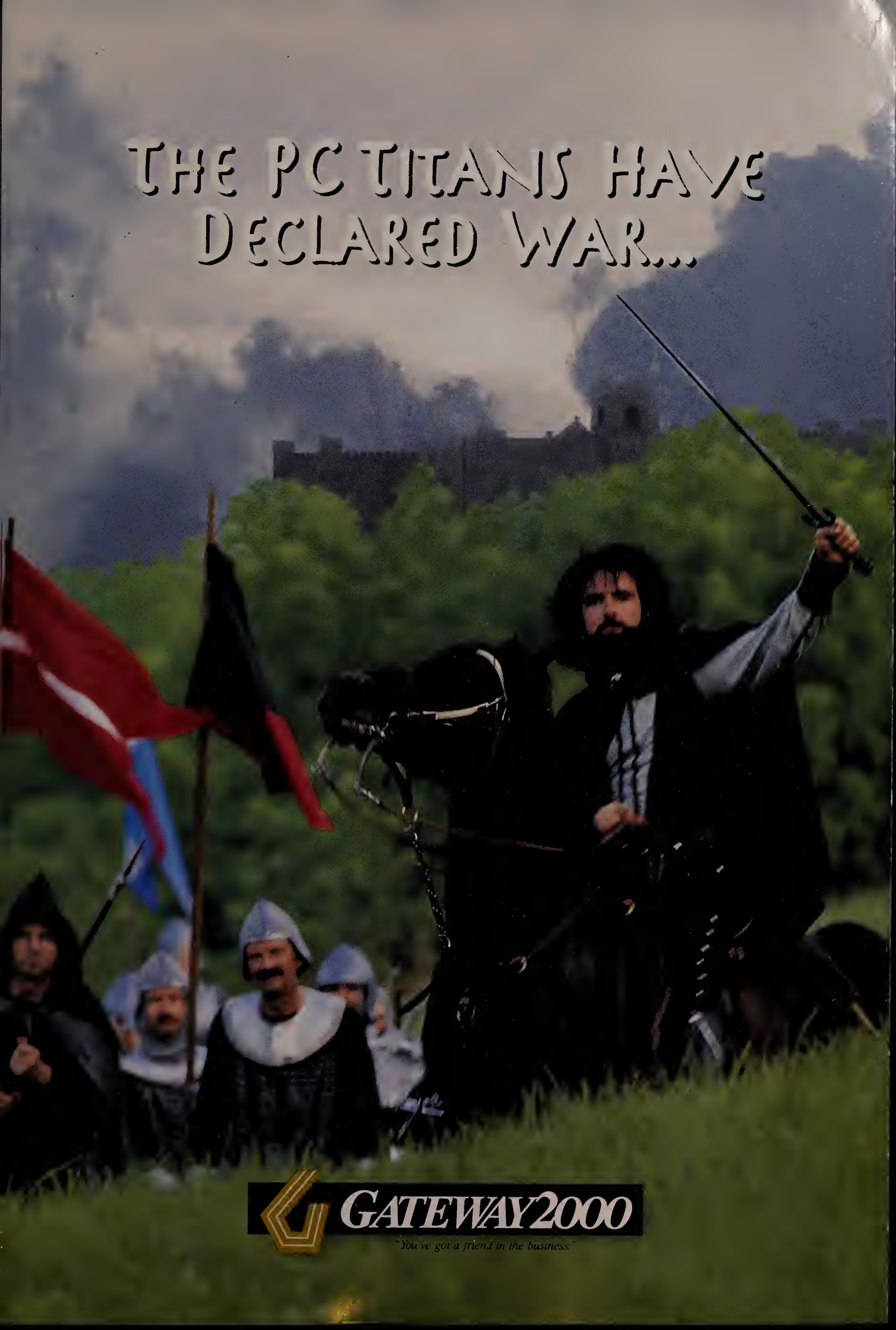
Notebook PC users can look forward to as much as 4½ hours of battery life and/or greater processing power this fall—even the muscle to run complex applications such as handwriting recognition. Battery life has held relatively steady at 3 hours or less for the past year, but a dogfight is about to break out between proponents of Intel's 386SL chip and Advanced Micro Devices' just-released SX clones.

AMD claims that upcoming systems built around its 25-MHz Am386SXL-25 will offer up to 4½ hours of useful battery life and 25 percent more power than Intel's 20-MHz 386SL or 386SX chips, which are rated at around 3½ and 3 hours, respectively. There should be at least a dozen 386SL and Am386SXL-25 systems offered at COMDEX Fall, including AMD versions from some large players who are showing their systems privately. In fact, the coming crush of Am386SXL-25 introductions has caused Bell Computer of Van Nuys, California, to move on to a 40-MHz notebook based upon AMD's Am386DXL-40. This chip's full 32-bit architecture makes it ideal for the handwriting recognition needed by slates, says AMD.

Meanwhile, Intel has rallied its share of developers—Zenith, ALR, Everex, Mitac, and Twinhead—around the 386SL, but the chip requires a significant redesign, while the AMD chip can run from current 386SX designs with minor alterations. An important power-saving element of the 386SL and the AMD chips is the ability to turn their clocks to 0 MHz. AMD claims a further edge in being able to turn off the entire computer between keystrokes without having to save CPU registers to memory.

That assertion still needs to be tested under real-use conditions, points out Genelle Trader, director of marketing for AST's portable systems. But AST customer research reveals a still-greater appetite for battery life. "Users would take 6 hours if they could get it," declares Trader, whose company is studying both designs.

GORDON STUDER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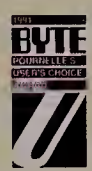

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Merger Mania, PC Style

Is the latest wave of mergers, buyouts, and strategic partnerships good for the PC industry—or for PC users?

Capitalism's nemesis, Karl Marx, once observed that history tends to repeat itself—the first time as tragedy, the second time as farce. If you've read the newspapers lately, it might seem the bad old eighties are repeating themselves, with Lotus buying Samna and cc:Mail, AT&T merging with NCR, Ashton-Tate scooping up Interbase and then being devoured by Borland, IBM and Apple entering into an unlikely tryst, and so on. Is this merger mania the new nineties madness, or does it make perfect sense—at least for the companies involved, if not for PC users?

The answer's not as simple or clear as anyone would like. While users almost universally applaud Borland's rescue of the dBASE standard from the arms of a company that seemed incapable of keeping it alive, and while the IBM-Apple cooperative arrangement appears certain to result in a new generation of easy-to-use PCs, user benefit isn't really the rationale behind the majority of these ventures. Instead, hardware and software giants are merging, buying, and dealing in preparation for a battle ahead—a battle to redraw the PC market map for the rest of the decade or longer. Meanwhile, smaller companies are scrambling for cover—and users' choices are getting fewer and fewer.

JOCK MCDONALD

Why Bigger Is Better

Why is size such an advantage in the era of easy-to-use, powerful computers? For one thing, the technology almost demands it. Despite appearances, graphical PCs are far more complex technically than their character-based predecessors. Old-fashioned, barebones PCs handled relatively simple tasks—word processing, spreadsheets, some data base and graphics jobs. At worst, a company had to figure out how to connect those PCs to its "real" computers—its mainframes and minis.

Now, thanks to networking and client-server data bases, graphical PCs *are* the company's real computers. That means businesses can handle mission-critical computing tasks for far less money and with far greater flexibility than ever before—as long as the software cooperates.

IBM, Lotus, Microsoft, and Ashton-Tate have all discovered just how difficult it is to design PC-based software that has the reliability, expandability, and flexibility required of mission-critical systems. If you're going to play in this league, then it makes sense to control as much of the user's software environment as possible. Even relatively elementary stuff, like making sure that two *Windows* applications can share data easily and reliably, turns out to be a bear in practice.

That's why, despite the mix-and-match promise of *Windows* computing, every large software vendor appears determined to line up a word processor, a spreadsheet, a data base, and a graphics package, in addition to whatever other software they're trying to promote. They all claim that their products will work within industry standards—and they will. So if you want to reap the benefits of this next generation of personal computing, then your best bet is a single-vendor solution—or so it might seem.

Is Small Still Beautiful?

Small vendors perform an important service to users and the PC community in general. They nip at the heels of their bigger, slower competitors, providing valuable products that the behemoths simply can't or won't deliver. And they often set daring new standards in power and ease of use. Borland did that in spades with *Paradox* and *Quattro Pro.* In the crush to find personal computing solutions that really work for large and small businesses, users will bear some burden to demand openness and freedom of choice in their next-generation PC hardware and software. The big vendors may try to convince you otherwise. It's a seductive line, but the onus is on them to demonstrate why less choice is better than more.

As always, I'm interested in your opinions on this or any other subject. Write to me at *PC World,* 501 Second St. #600, San Francisco, CA 94107; fax 415/442-1891; MCI Mail Richard Landry/301-3685.

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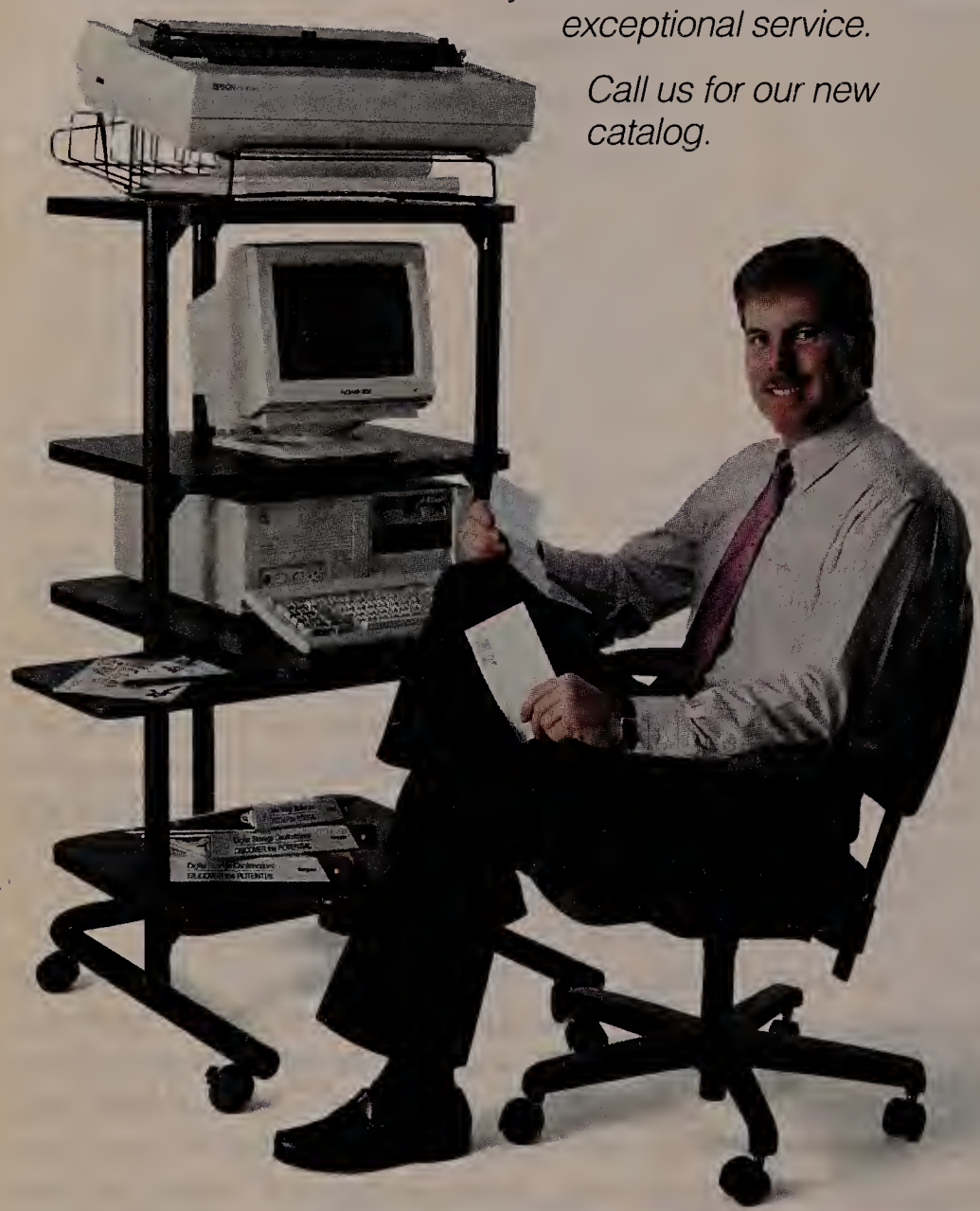

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Jeff Glines, Mr. Infographics

PC World mourns the passing of Jeff Glines, one of the magazine's longest-term employees and, for many of us, its heart and soul. Jeff held down a variety of jobs in his years here at *PC World;* most recently, as design associate, he took on the daunting task of creating charts and graphics that cut through the numerical clutter to reveal the precise information you need to buy smart. He did his job with an intelligence and flair that earned him the affectionate title, "Mr. Infographics." We'll all miss him dearly.

POWER TIP NO. 211

Displaying More Text in Word

It's often handy to view more text on the screen in *Word 5.0* using the program's 43- or 50-line modes, but it's difficult to edit such tiny type. Here's a way to have the best of both worlds.

Press <**Esc**>o, move to the 'display mode' field, and press <**F1**>. Select one of the extended modes using the cursor keys, then press <**Enter**>. Your screen will now display more than the normal 25 lines of text. How many depends on your display adapter.

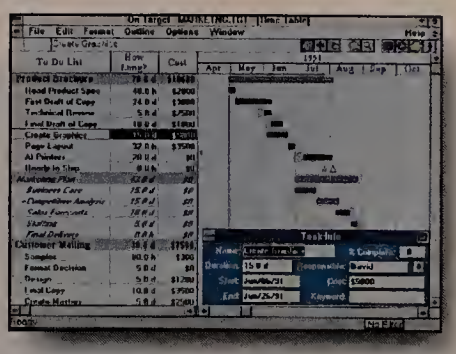
To switch between modes, press <**Alt**>-<**F9**>. Because *Word* always switches between the last two display modes you've chosen, you can edit in the easy-to-read 25-line mode, then switch to an extended mode to get the big picture. When you exit and later reload *Word,* it will start up in the last mode used.

George Campbell
Contributing Editor

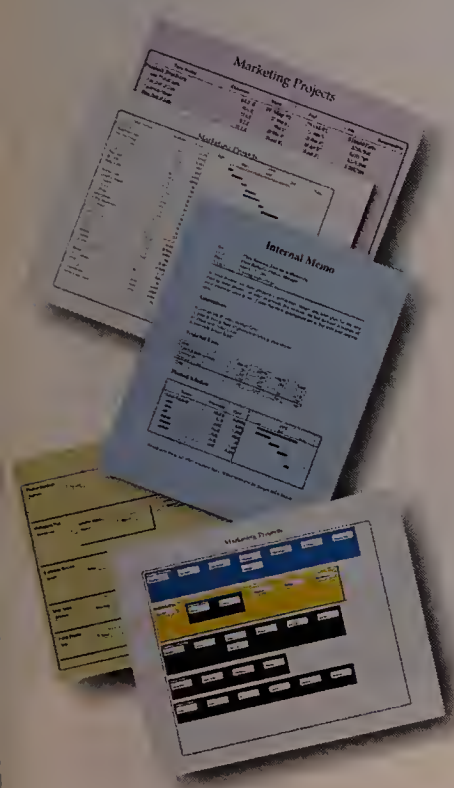
—Coming soon to a department under you.—

NIGHT OF THE LIVING DEADLINES.

Project Calendar™ *presents your schedules in a familiar calendar format—and that's just one of the many On Target reports.*



On Target is designed specifically for Windows™ 3.0. Its graphical user interface, familiar spreadsheet format, and full color WYSIWYG graphics make project planning easy.



On Target creates a number of different reports. You can also copy graphics into other Windows applications.

With On Target, everyone is clear about their responsibilities—so your team can work together more effectively.

It's 2:30 a.m. Do you know where your projects stand? Now you can avoid those horrifying all-nighters with On Target™—the Windows 3.0 project planner from Symantec.

On Target is the easiest way to keep tabs on virtually all your projects at once. It's the most appropriate way, short of formal "project management," to manage all your schedules and deadlines.

On Target instantly converts your projects into a variety of detailed schedules, charts and graphs. Just enter your schedules into the familiar spreadsheet interface, and choose your own colors, fonts, and display format. On Target does all the rest.

On Target's *Schedule Assistant*™ guides you logically through the planning process. It even comes with *Starter Schedules* to help you start planning right away. So if your workload has become a nightmare, rest easy. It's all in a day's work with On Target.

Call now for a free demo disk.*

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rcle 272 on reader service card

*Demo disk available in US and Canada only. Outside the US, call (408) 253-9600. © 1991 Symantec Corporation. On Target, Project Calendar and Schedule Assistant are trademarks of Symantec Corp. All other products or brand names listed are trademarks or registered trademarks of their respective holders.

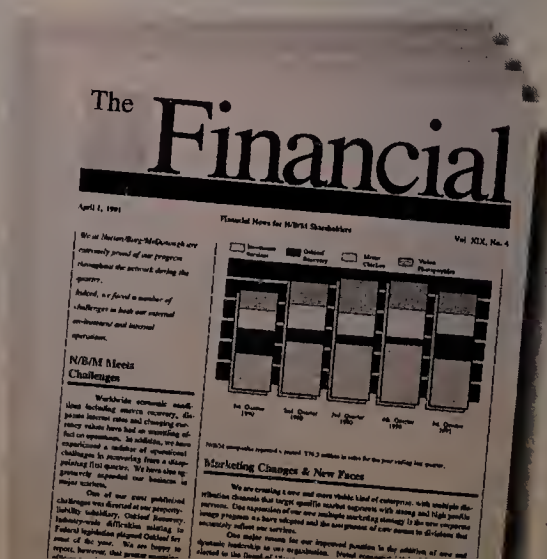
SYMANTEC.™

Some days you have all the time in the world.

When the pressure is on, pour on the speed. With Hewlett-Packard's new LaserJet IIISi printer. A powerhouse that delivers at a throughput speed of 17 pages per minute.

With the LaserJet IIISi, you're up to speed the moment you give the "print" command. HP's RISC-based formatter and the PCL5 printer language, with vector graphics and on-the-fly typeface scaling, yield fast results. This printer also represents a new standard for I/O performance with optional Network Printer Interface cards for either Ethernet or Token Ring.

The LaserJet IIISi is specifically designed for shared-use environments. Its high-volume paper handling features include two 500-sheet input trays and a monthly duty cycle of 50,000 pages. HP offers software-selectable language switching between PCL5 and optional Adobe® PostScript.® For added versatility, your options include



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an envelope feeder and two-sided printing.

Beyond speed and efficiency, the LaserJet IIISi delivers the sharpest 300 dpi print quality yet. In fact, HP's revolutionary combination of Resolution Enhancement technology and new microfine toner challenges the print quality of many 600 dpi printers.

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*Suggested U.S. list price. © 1991 Hewlett-Packard Company PE12101

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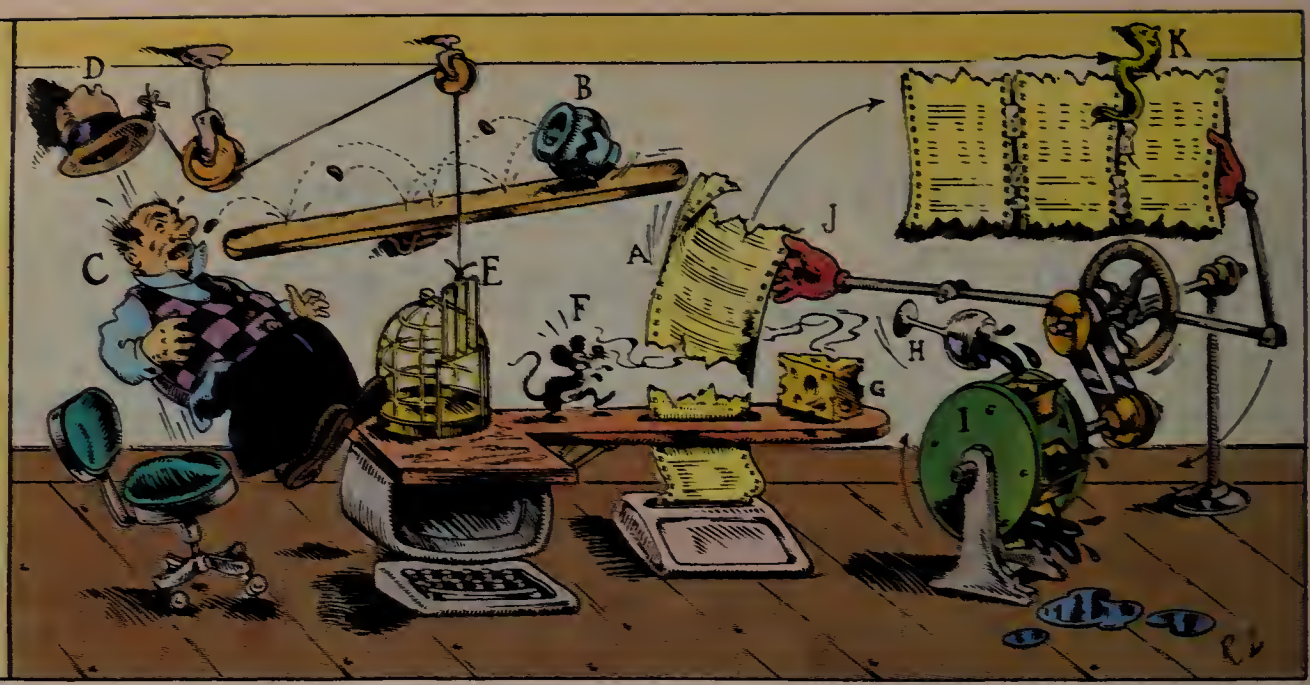
RISING SPREADSHEET (A) KNOCKS MEXICAN JUMPING BEANS (B) INTO MOUTH OF NEUROTIC MAN (C) WHO IS SO DISCOMBOBULATED THAT HIS HAIR STANDS ON END, DISLODGING HAT (D) WHICH OPENS CAGE (E) AND RELEASES EPICUREAN MOUSE (F).

MOUSE, INSPIRED BY SCENT OF PERFECTLY AGED CAMEMBERT CHEESE, GNAWS THROUGH SPREADSHEET, ONLY TO DISCOVER HE HAS BEEN FOOLED BY AROMA OF OVER-RIPE GORGONZOLA (G).

IN A FIT OF PIQUE HE SPILLS VINTAGE WINE (H) INTO WATER-WHEEL (I) WHICH TURNS PULLEY THAT CAUSES GLOVE (J) TO GRASP SPREADSHEET AND MOVE IT TO TAPING AREA.

SHEET IS TAPED SECURELY IN PLACE BY TRAINED ADHESIVE TAPE WORM (K).



New Sideways takes all the fun out of printing your 1-2-3 spreadsheets.

Introducing new Sideways version 3.3.

What do you do when your spreadsheet's too wide for your printer?

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Sideways runs as an add-in to 1-2-3 Releases 2 and 3. As well as Symphony. So printing is fast and easy.

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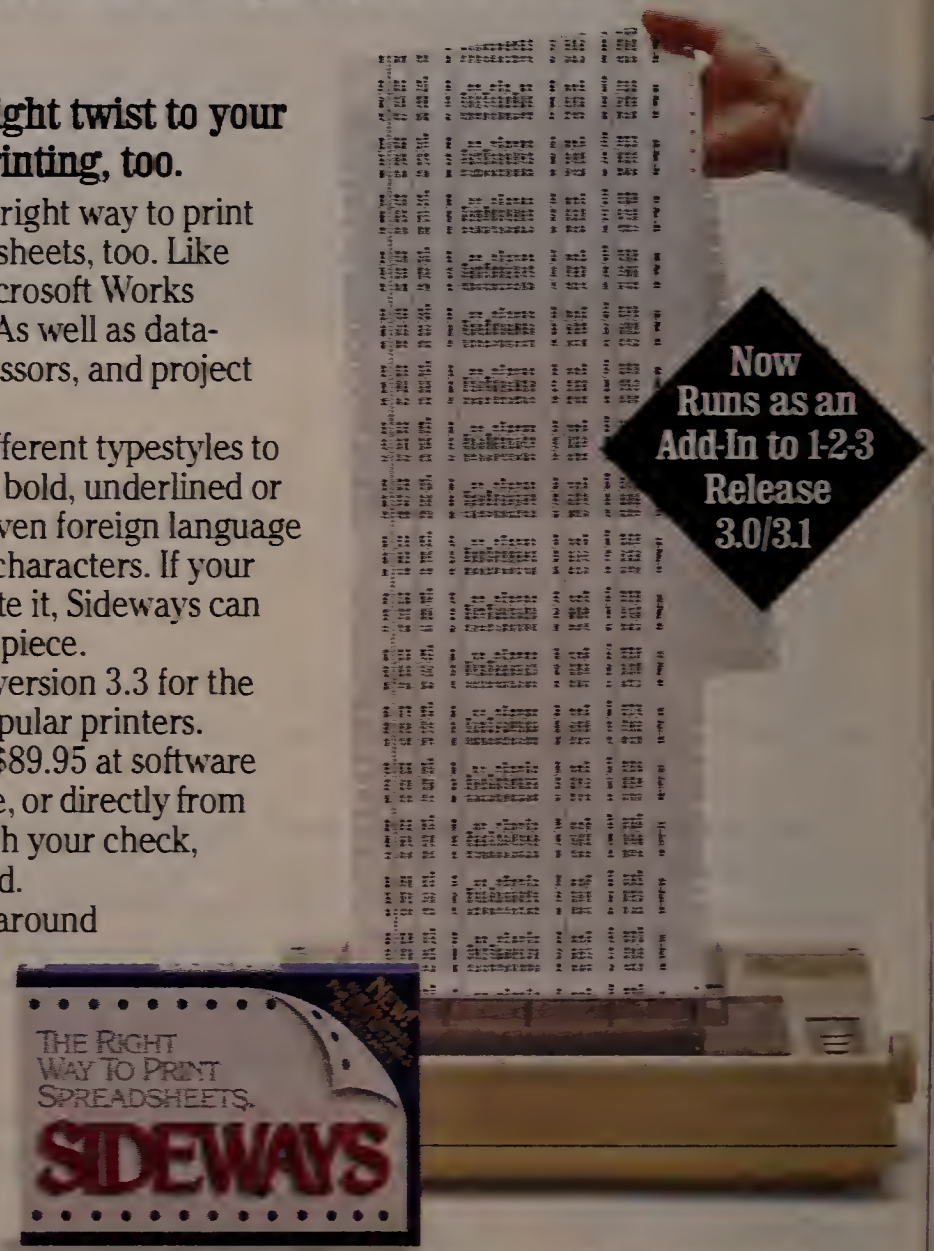

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Sideways version 3.3 works with all releases of 1-2-3 as well as other software. Add-in capability requires 1-2-3 Release 2, Release 3, or Symphony.

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Circle 148 on reader service card

LETTERS

Reactions and responses from the PC World community

TROY THOMAS

Microsoft's Window of Opportunity

Richard Landry did a great job in his June column airing out the issues around Microsoft's advantage with *Windows* applications. *Windows* developers' complaints are realistic; I'd like to see Microsoft offer them more support. But it seems logical for Microsoft to have come up with a bug-free environment and working applications before offering information to competitors. After all, *Windows* is a Microsoft product. It may seem hurtful to consumers, but as a matter of principle, only Microsoft can decide whether or not to share. I support industry and consumer pressure on Microsoft, not a court-forced decision.

Leon Fleyshman
Long Beach, California

Another Good PC Cause

After reading Richard Landry's May column, with its mention of donating used PCs to worthy causes, I thought I'd write about the nonprofit Himalayan Computer Foundation. Our mission is to preserve Himalayan culture, promote education, establish progressive health care, and protect the region's environment. For our first project, I'm writing a custom *Paradox* application to improve patient tracking for eye hospitals in Nepal, and Borland's Philippe Kahn has donated three PCs to help. Computer technology is an electronic bridge across the chasms of a divided world. If you'd like more information, you can contact me directly at Himalayan Computer Foundation, 745-E Pulehuiki Rd., Kula, HI 96790; 808/878-2714, fax 808/878-2713, MCI Mail Himalaya 433-7582, CompuServe 71521,2043.

Mitchell Silver
President

Keeping 486 Rates Down

Pete Mc Kenney complains about Southern California Gas's use of advanced PC technology in his June letter ["486s: Raising Your Rates?"]. His remarks indicate a lack of understanding of my statements to Alice LaPlante in March ["Pro vs. Con: Are You Ready for a 486?"]. You can't bypass cost-effective technology just because it's new—if you see a way to recoup your investment, you have to go for it. At my company, we've identified a few applications where 486 power is required, and we've made the appropriate investment. But our current population of 486s is 5 out of more than 2500 PCs. I'd guess our mix of machines is typical of most businesses—maybe even Mr. Mc Kenney's.

Robert D. Holmes
Southern California Gas Company
Los Angeles

Two-Fisted Brutality?

I was surprised to read Rev. Peter E. Loewy's May letter characterizing Mark Marek's *Two-Fisted Management* as brutal. Lighten up, Rev. Loewy! This strip is theater of the absurd at its zenith; it has made me laugh myself to tears. Unfortunately, the abusive Arnold Harris style really exists in many management situations. But humor can be the most effective form of criticism. Maybe a few Arnold Harrises out there will read *Two-Fisted Management* and get the message.

Robert K. Brenneman
Frederick, Maryland

Heavenly Color Dot Matrix Transparencies

Thanks for the information on desktop color in June ["Buyers' Guide: Color Peripherals"]. The printing of my bargain-priced Star NX1020 Rainbow dot matrix printer is heavenly. The *Windows* driver works well with color applications and also provides some interesting monochrome dithering and random and clustered printing. I am even able to print transparencies by removing the roller unit to solve the smearing problem. All I do is place a sheet of paper behind the transparency and keep the film tight to the platen. Folex Film Systems sells the dot matrix transparency film (BG 41). You can reach them at 6

(continues)

ANTHONY RUSSO

ANNOUNCING ...

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Daniel Road E, Fairfield, NJ 07004; 800/631-1150.

Pastor Brent Harwerth
Berean Fundamental Church
Ainsworth, Nebraska

The Good Words Into Print

I just wanted to tell you how much I appreciate George Campbell's *Words Into Print*. It covers areas briefly touched on during word processing training but usually not remembered. Our office made the switch from dedicated word processors to *WordPerfect* just over a year ago, and *Words Into Print* has been a real help. Every month we look forward to the column, and just about everyone here is putting its tips to good use.

William C. Gile
Leominster, Massachusetts

Throw That Dog a Bone!

Arnold Beichman complains in June *Letters* about your obvious bias in favor of *WordPerfect*. Your reply about having to be responsive to the majority of your readers is pure pap. The coverage you give to other word processors isn't enough to keep non-*WordPerfect* readers going. If you treated a dog this way, the humane society would be after you for not tossing it a bone often enough to keep it alive.

David Katz, M.D.
Palm Springs, California

Fulfill This Promise—Please!

In reaction to Michael S. Vaughn's "Unfulfilled Promises" letter to *Consumer Watch* in June, I say that one mistake doesn't show the whole picture. Northgate messed up in its dealings with Mr. Vaughn, but they also made amends. Show me another company that would reimburse credit card interest charges and phone costs. Northgate is a cut above everyone else I've dealt with in terms of service, and they've earned their customers' loyalty.

Loren Rose
Sepulveda, California

(continues)

Lower your budget not your expectations.

Before you run out and spend four or five thousand dollars for a 386SX notebook PC, we seriously suggest you take a close look at Samsung.

We designed our NoteMaster™ 386S/16 to have the performance features most people need at a substantially lower price than the Compaq LTE 386/20.

NoteMaster has a better screen, a more responsive keyboard and can be upgraded with a coprocessor, modem or more memory without even opening up the case. It's also slimmer and lighter than Compaq. And it comes with our toll-free customer service hotline so you get answers directly from our product experts. As one of the world's largest manufacturers, we make most of our own components, so you realize considerable savings with superior quality control.

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You'll discover you can own the best without paying the most.

	Samsung NoteMaster 386S/16	*Compaq LTE 386/20*
Processor	*16MHz 386SX*	*20MHz 386SX*
Dimensions	*8.5" x 11" x 2.1"* *7 lbs.*	*8.5" x 11" x 2.2"* *7.5 lbs.*
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Memory	*1MB expandable to 5MB*	*2 MB expandable to 10MB*
Software Incl.	*Laplink III* *MS-DOS* *Windows 3.0*	*Not included*
Support	*Toll-free 800 number* *On-line modem support*	*Toll-free 800 number*
Price	*20MB - $2799* *40MB - $3099*	*30MB - $4399* *60MB - $4999*

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Circle 251 on reader service card

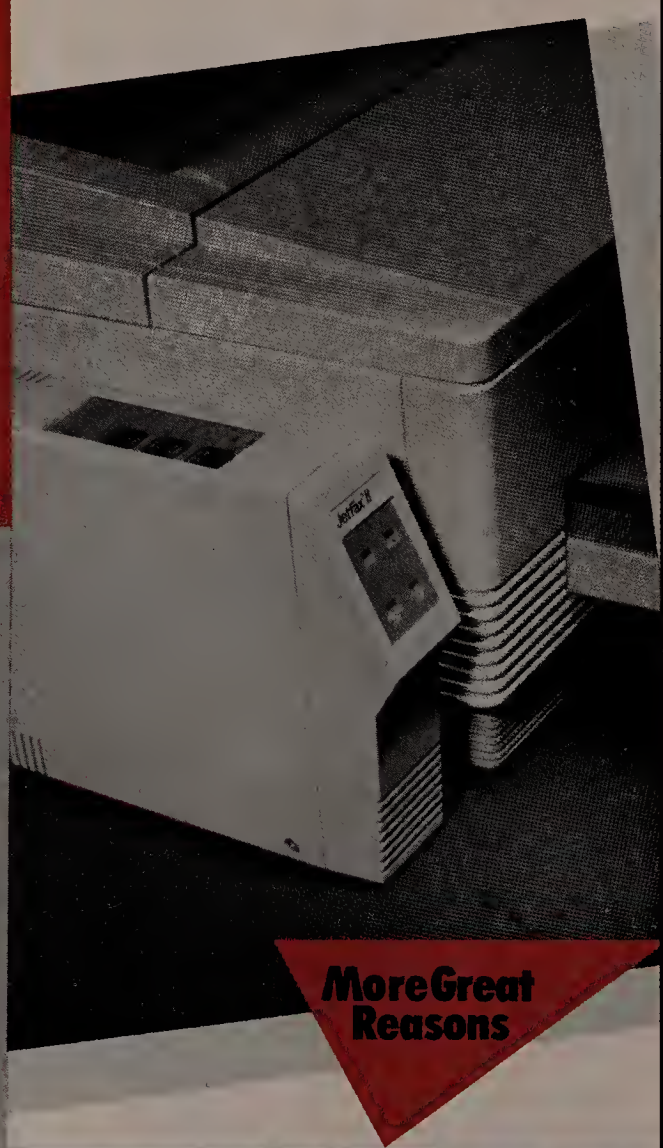
Protected Publisher

As a loyal longtime owner of *Ventura Publisher*, I must call attention to a serious omission in your "Face-Off: PageMaker vs. Ventura" in June. The *Windows* version of *Ventura* is crippled by an insidious copy-protection scheme, which requires owners connected to a LAN to wait for *Ventura* to check for every other location where *Ventura* might reside. The program also requires LAN-connected systems to have NETBIOS.EXE loaded in memory, which eats up 29K of valuable RAM. In my opinion, this copy-protection scheme renders *Ventura* nearly unusable.

Dave Hallas
Kansas City, Missouri

Ventura Software replies: *Ventura Publisher* is published without copy protection to allow licensed users to make backup copies. We use the NETBIOS requirement to restrict unlicensed use on networks. Loading NETBIOS requires 2K to 29K of RAM, depending on the network; as *Windows 3.0* runs in high RAM, this requirement doesn't typically crowd *Windows* applications. But in response to customer concerns, we're reevaluating this policy. Increased loading time experienced by this reader may come from the program's reading of WIN.INI for installed fonts. This delay is avoidable; check page A-2 of your manual for details.

4 Great Reasons To Add Fax To Your Laser Printer



1 Plain Paper Quality—Fast
With JetFax, get your faxes on plain bond paper at your laser printer, fast. No more curled thermal paper!

2 Easy PC Faxing
Send PC files as faxes from within your application. No fax boards.

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JetFax provides low-cost faxing capability to LAN or switchbox users. No dedicated servers!

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JetFax is inexpensive. So is plain paper. Save big on thermal paper and copying costs!

MoreGreat Reasons

Feature	JetFax II	HP LaserJet FAX
Laser-printed faxes	Yes	Yes
PC faxing	Yes, Multi-user	Yes, Single-user
from within application?	Yes	No
network compatible?	Yes	No
Standard memory	60 pages	13 pages
Maximum memory	240 pages	70 pages
Warranty	2 years	1 year
Price	$995	$1895

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Circle 118 on reader service card

Second Look: Backup Software Features

In the Features Evaluation for the products in our July 1991 "No-Sweat Backup Software" review, a production error resulted in switched product headings. The corrected table is on page 32. Apologies to our readers, Central Point Software, Fifth Generation Systems, Symantec, and Westlake Data!—Ed.

Corrections and Clarifications

"Paradox Picture Formatting" in May *User Group Tips* capitalizes the first letter of only the first word in a field. To capitalize the first letter of every word in a field, *View* your table and place the cursor on the field you want to format. Press <**F9**> to edit, then <**F10**>. Select *Valcheck Define* and press <**Enter**>. Select *Picture*, type *{!*}?[ ]}, and press <**Enter**><**F2**>. If you want to capitalize only the first letter of the first word in the field, omit the space between the brackets.

In "DOS Does It Right" (July), the correct fax number for the Microsoft Corporation is 206/883-8101. In our July Buyers' Guide "Powerhouse Utilities for Under $50," the correct telephone number for Berkeley Systems, Inc., which makes *After Dark for Windows 1.0*, is

(continues)

There's only one word processor that's as easy to pick up as ours.

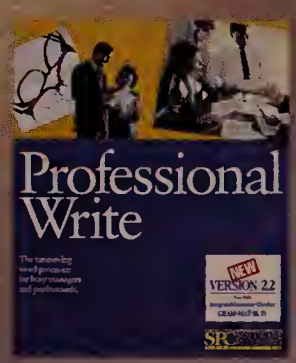
Forget everything you've heard about word processing software.

That the software takes too much time to learn. That they have all sorts of features you'll never use. That it's a lot easier to pick up a pen and start writing.

Professional Write® from Software Publishing Corporation can do everything from a simple memo to a complex report. Yet all you do to start using Professional Write is to turn it on. You don't need to spend hours poring over manuals or sitting in classes. And, there are simple on-screen menus to take you from start to finish.

Professional Write wasn't just named for professionals, it was designed for professionals. No wonder it's the best-rated, best-selling executive word processing software.

What proof? Put down your pen and call.



SPC SOFTWARE PUBLISHING CORPORATION

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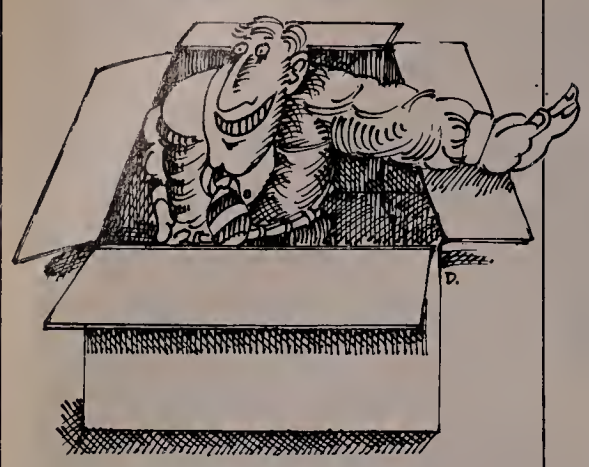
AccountMate.



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Circle 258 on reader service card

FEATURES EVALUATION

Norton, Central Point: Safe Bets

You can trust your data to our two Best Buys. Both excel at data security and provide solid backup and restore features.

● Yes
○ No
◒ Deficient

	Central Point Backup 6.0	Fastback Plus 2.11	Norton Backup 1.2 [1]	PC-Fullbak+ 2.01
Standard features				
List price	$99	$189	$149	$99
RAM required	512K	330K	512K	512K
Multiple user levels	●	●	●	◒[2]
Scripts	●	●	●	●
Macros	◒[3]	●	●	○
Context-sensitive help	●	●	●	●
Mouse support	●	◒[4]	●	○
Data security				
Restores from damaged disk	●	◒[5]	●	◒[5]
Restores from incomplete backup set	●	●	●	●
Compares backup with original	●	●	●	●
Warns before overwriting disk	●	●	●	●
Can warn against replacing newer file	●	●	●	●
Ignores hidden files	●	●	●	●
Can password-protect backup sets	●	●	●	○
Backup options				
Select directories/files from tree display	●	●	●	●
Select files by wild card	●	●	●	◒[6]
Select files by date range	●	●	●	●
Select files by attribute	●	○	●	○
File list shows size, date, and time	●	○	●	●
Estimates time/number of disks required	●	●	●	●
Data compression	●	●	●	●
Multiple drives in same backup	◒[7]	○	●	◒[7]
Appends incremental backup to same disk	●	○	●	●
Differential backup	●	●	●	◒[8]
Formats disks during backup	●	●	●	●
Backs up to any logical drive	●	●	●	●
Backs up to tape drive	●	○	●	◒[9]
Restore options				
Restore files to different directory	●	●	●	○
Restore subdirectories under new name	●	○	●	○
Select directories/files from tree display	●	●	●	●
Select files by wild card	●	●	●	◒[6]
Select files by date	●	●	●	◒[6]
	BEST BUY		BEST BUY	

[1] Norton Backup 1.0 won a Best Buy in July 1990.
[2] Beginner version is a separate program.
[3] Available with PC Tools Deluxe.
[4] Simulates keyboard cursor keys.
[5] Could not always restore from damaged disk.
[6] From DOS command line only.
[7] Can be appended to same backup set but requires separate backup steps.
[8] Not available as a single menu option; requires multiple settings.
[9] Does not support standard QIC-40 or QIC-80 drives, only select drives from Wang, Everex, ComputerLand, Archive, and Maynard.

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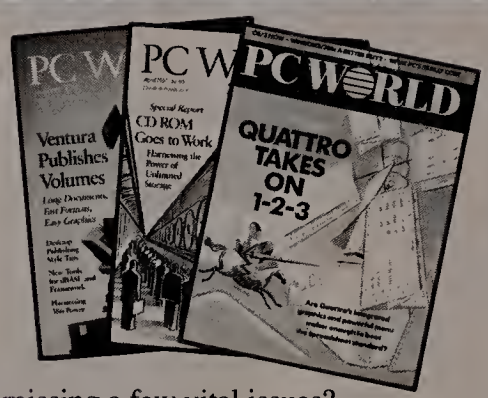

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POWER TIP NO. 201

@EXCH Puts Harvard Graphics Charts in Order

The next time a set of bars gets hidden from view in one of your 3-D overlapping-graph charts, try using the @EXCH calculation. It swaps the contents of two series to bring the smaller values up front. It can also reorder your series from smallest to largest or the other way around. This makes a chart, particularly a bar or area chart, explicit about who or what is on top (or at the bottom) and how all the others fall in line.

To use @EXCH, put the cursor somewhere in one of the two series to swap, press <**F6**> in version 2.3 (or <**F4**> in prior releases), move the cursor to the 'Calculation' prompt, and type @**EXCH**(#*x*). In place of *x*, type the number of the second series in the pair. The two series will switch instantly. If necessary, repeat the process for other sets of two series until the chart is meaningfully rearranged. Your audience will love you for it.

Steve Sagman
New York, New York

NEW

Borland ranked best
Quattro Pro beats Lotus 1-2-3

Two recent industry studies objectively confirm the facts: Customers rank Borland best among software companies, and Quattro® Pro outperforms *all* Lotus® spreadsheets.

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Because Borland is smaller than our competitor, we work smarter, we try harder, and it's paying off: Borland was just ranked "Best Application Software in Customer Satisfaction, in Small and Medium Sized Businesses," in the prestigious J.D. Power and Associates survey.

Who would you rather buy your next spreadsheet from?

J.D. POWER AND ASSOCIATES

APPLICATION SOFTWARE
CUSTOMER SATISFACTION INDEX℠

June 6, 1991

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2. WORD PERFECT
3. CLARIS
4. ALDUS
5. MICROSOFT
6. LOTUS

Quattro Pro: The standard of excellence.

InfoWorld reviews confirm what more than one million PC users already know: Quattro Pro is the best DOS spreadsheet that money can buy. Better than *any* Lotus spreadsheet including their recently released version 2.3.

Just check out the *InfoWorld* review results below. Quattro Pro wins in comparison to Lotus 1-2-3® hands down in *InfoWorld* and with more than 1,000,000 enthusiastic users.

Number of ...	Quattro Pro 3.0	Lotus 1-2-3 v. 2.3	Lotus 1-2-3 v. 3.1
"Excellent"	7	2	3
"Very Good"	8	4	5
"Good"	0	5	4
"Satisfactory"	2	5	3
"Poor"	0	1	1
Overall score	**8.4**	**6.3**	**6.5**

REPORT CARD — INFO WORLD

SPREADSHEET SOFTWARE
Quattro Pro
VERSION 3.0

Criterion	(Weighting)	Score
Performance		
Formulas/analysis	(100)	Very Good
Compatibility	(50)	Very Good
Speed	(75)	Very Good
Database	(75)	Excellent
Graphics	(75)	Excellent
Output	(50)	Excellent
Macros	(50)	Very Good
Consolidation/linking	(50)	Excellent
Capacity	(50)	Very Good
Network	(50)	Satisfactory
Documentation	(75)	Excellent
Ease of learning	(50)	Excellent
Ease of use	(100)	Very Good
Error handling	(50)	Very Good
Support		
Support policies	(25)	Very Good
Technical support	(25)	Satisfactory
Value	(100)	Excellent
Final score		**8.4**

We don't blame Lotus for trying to underplay ratings such as these, but clearly Quattro Pro is more powerful. It has better graphics, better capacity, better macros, better consolidation and linking, and much more!

Borland and Quattro Pro: The obvious choice.

Company for company, product for product, the choice is clear. Join more than a million users and upgrade to Borland's Quattro Pro today! If you own any version of Lotus 1-2-3, for only $129.95 we'll rush you your own copy of the best spreadsheet from the best company.

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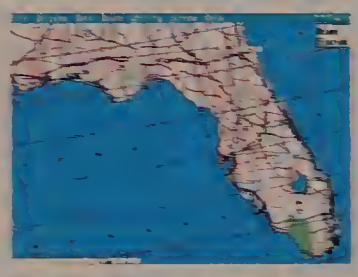

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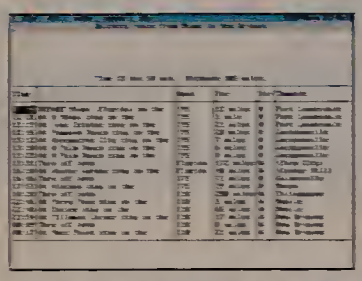

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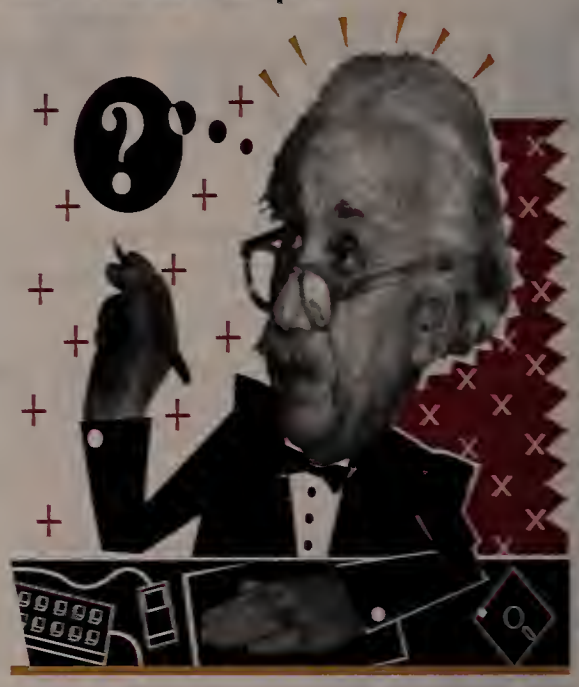
Windows Quiz Answers

Here are the answers to July's *Rate Your Windows IQ* quiz.

In determining correct entries, we disregarded question 9, which didn't offer the correct answer of 50 percent. We also threw out question 12, because the Recorder can paste in *some* commands to a DOS program from the Clipboard. We hope you enjoyed the challenge; remember to keep your eyes open for more quizzes and prizes in upcoming issues.



GORDON STUDER

1) **D. *All of the above (run=123.exe, run=123.pif, and run-123)*** WIN.INI commands automatically open *1-2-3* when you start *Windows*.

2) **C.** UAE stands for ***Unrecoverable Application Error.***

3) **C. *<Alt>-<Enter>*** is the keyboard command that toggles DOS applications between full-screen and windowed displays under 386 enhanced mode.

4) **A. *File backup*** is not included in a bundled *Windows 3.0* utility.

5) **C.** If you set up a permanent swap file, as opposed to using the temporary one, you ensure that *Windows* will swap to disk as fast as possible under ***386 enhanced mode.***

6) **D.** Virtual memory is ***a technique that uses the hard disk to simulate additional system memory.***

7) **B.** To ensure that a temporary *Windows* swap file doesn't eat up every last byte of available disk space, you should include ***MinUserDiskSpace = 1024*** in the [386Enh] section of SYSTEM.INI. (Actually, the line isn't absolutely necessary; *Windows* leaves 512K of disk space free if the MinUserDiskSpace line is absent.)

8) **C.** RAMDrive speeds up *Windows* performance when used to hold ***application "temp" files.***

9) In 386 enhanced mode, if only two windowed DOS applications are running in the background, each using a PIF file background priority setting of 25, another DOS program with a foreground priority of 100 will receive 50 percent of processor time when running in the foreground. (*Windows* itself has a default background setting of 50; thus the base is 50+25+25+100, or 200; and 100 is 50 percent of 200.)

10) **B. *$208*** is the highest possible Solitaire score for a single game using Vegas scoring.

11) **C.** The SmartDrive CONFIG.SYS command DEVICE = SMARTDRV.SYS 1024 256 means ***create a 1024K disk cache for use with DOS programs, and reduce the disk cache to 256K when Windows starts.*** (Actually, *Windows* doesn't reduce an extended memory disk cache immediately—only when it needs more memory for applications.)

12) *Windows'* Recorder macro utility can't be used to issue *all* of a DOS program's commands.

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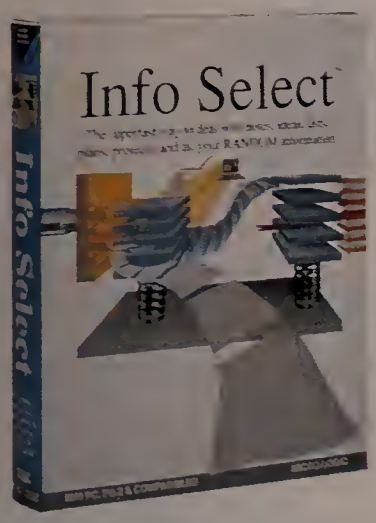

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Client info

Decisions

Management

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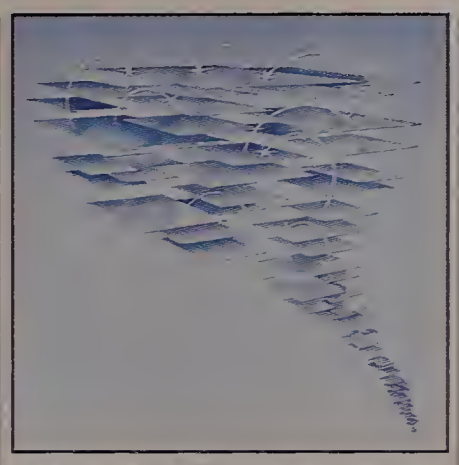
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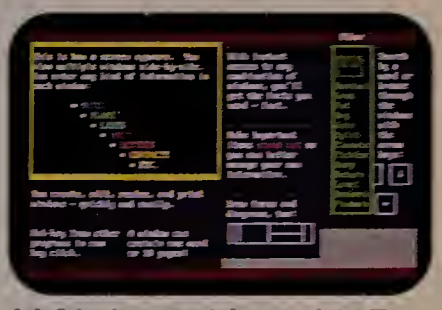
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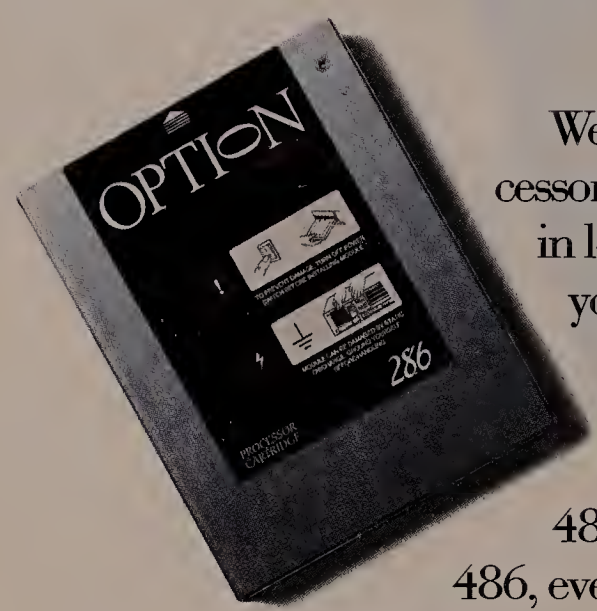

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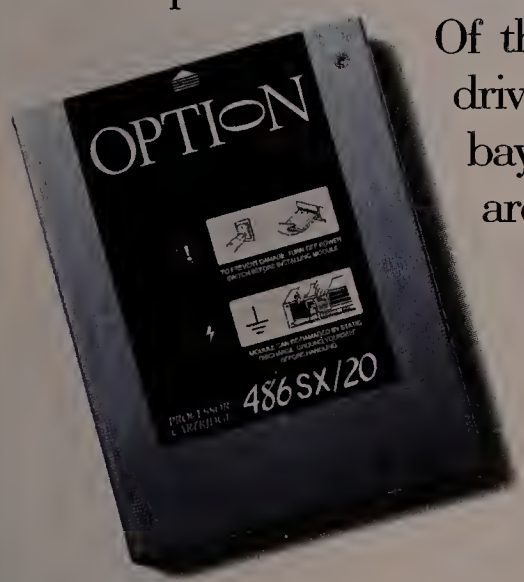

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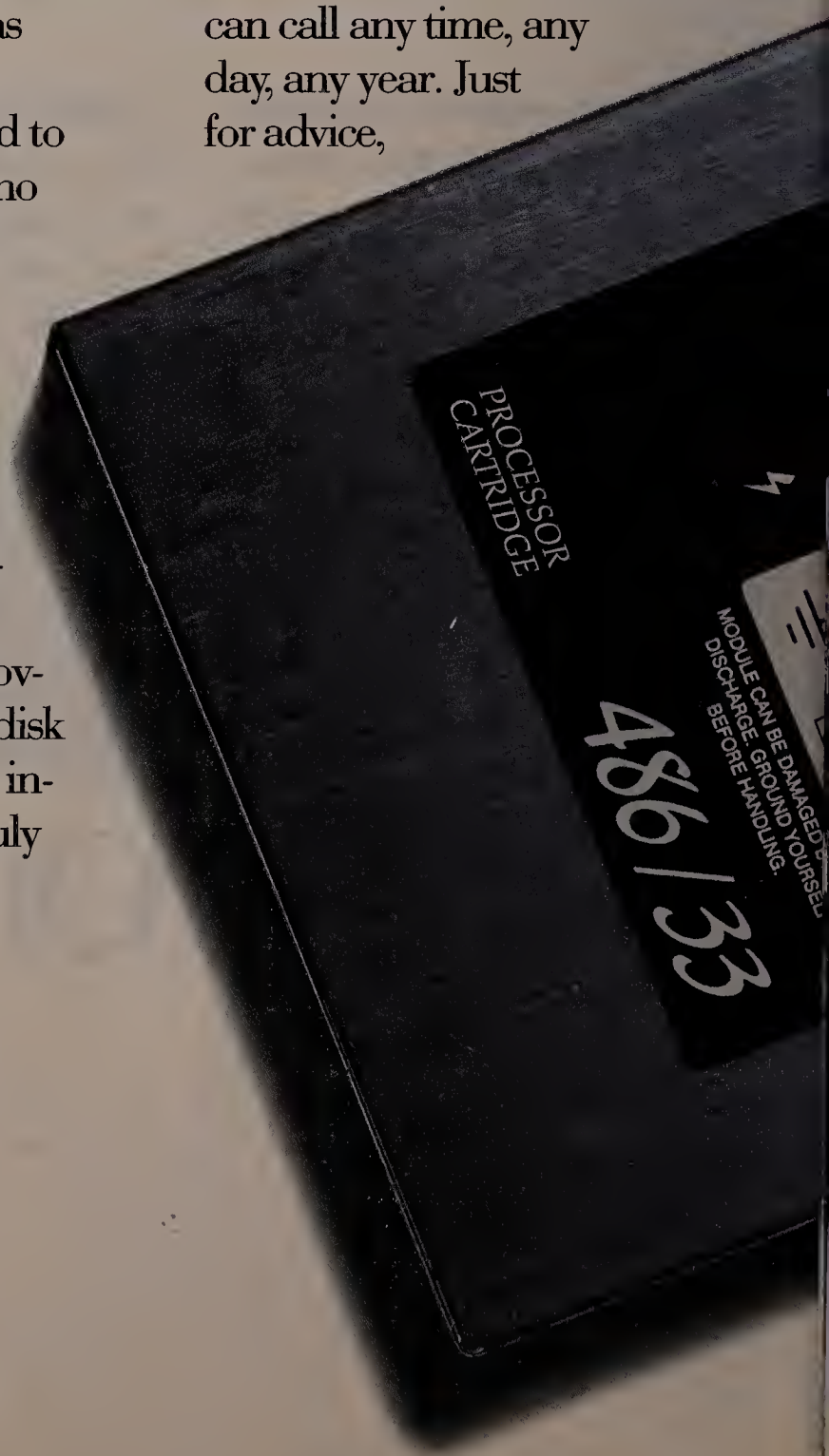

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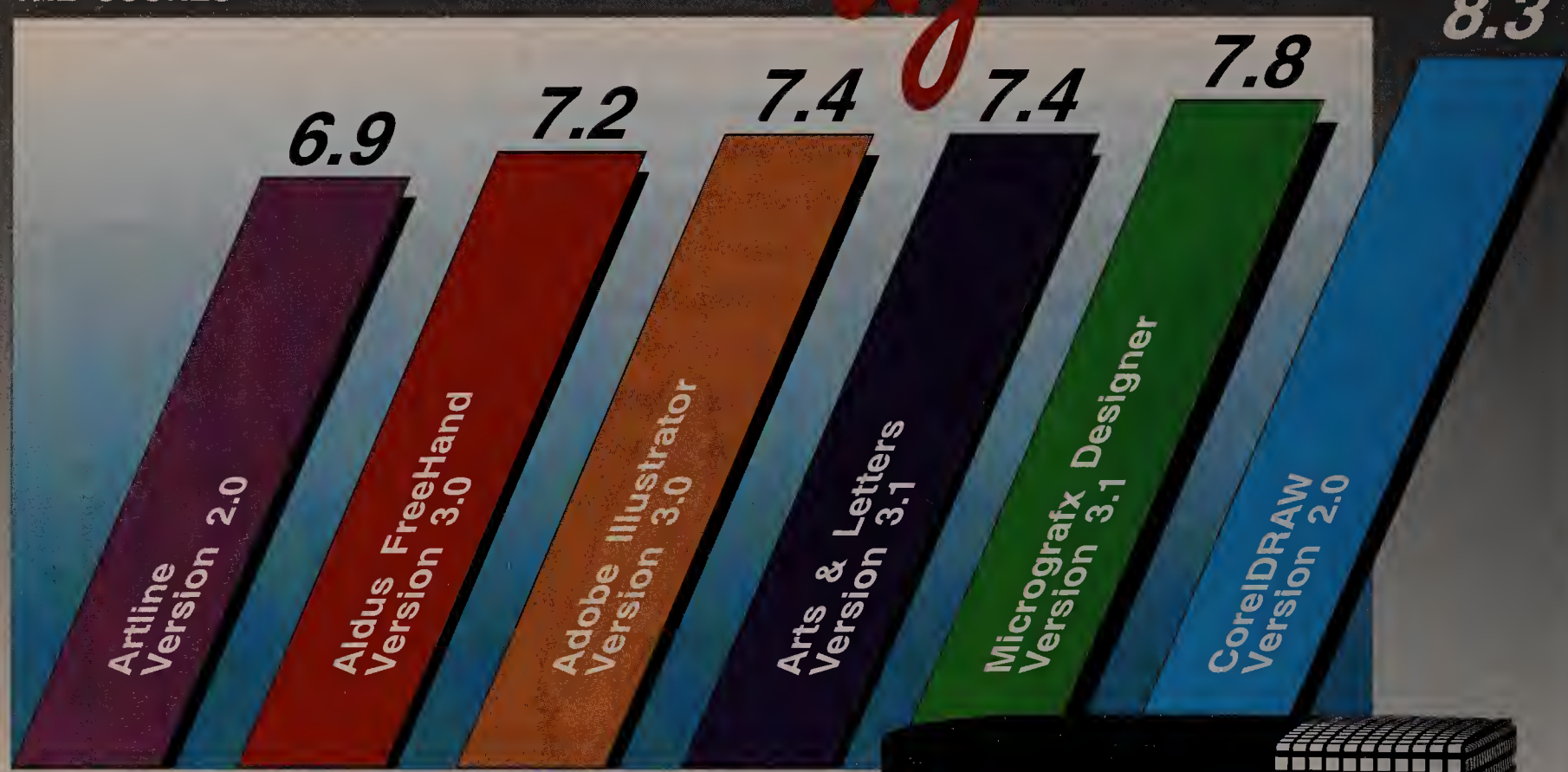

InfoWorld Product Comparison June 17, 1991

CorelDRAW wins InfoWorld Evaluation

Yes, CorelDRAW has done it again! In a pivotal InfoWorld product comparison, CorelDRAW, running under Windows 3.0, beat all leading illustration packages — Macs included!

InfoWorld states: "CorelDRAW combines strong ease of use with a top-notch selection of drawing and editing tools...The program has superior typehandling and tracing utilities...CorelDRAW is applicable to the widest range of drawing uses."* Without a doubt, CorelDRAW speaks for itself as the world's finest graphics software!

Mike Heck, Doug and Denise Green, InfoWorld June 17, 1991.

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Print double-sided pages using WordPerfect, skip dBASE IV's title screen, set any point size for Windows' PostScript fonts, fix high-resolution Windows' tiny DOS font, find drive type support, find more hardware interrupts, find a use for your PCjr, turn off your blinking cursor, and use E-mail to link remote office LANs and employees on the road.

Karl Koessel and Robert Lauriston

ANTHONY RUSSO

WordPerfect Double-Sided Printing

Q. *Your February* Words Into Print *column contained a* Microsoft Word *macro that allowed users to print only the odd or even pages of a document. Using the macro, you could print your odd pages, flip and reorder them, and then print the even pages on the backs of the odd pages. Is there any way to convert this macro to* WordPerfect 5.1?

Demerette Kee
Chicago, Illinois

A. No need to—that capability is built right into the program. On the Print menu, just select *Multiple pages,* then enter **o** to print only the odd pages, or **e** for only the even.

Get Right to Work in dBASE IV

Q. *Is there some way to bypass the Ashton-Tate logo and sign-on screen and go straight to the* dBASE IV 1.1 *Command Center? Since we use another product for printing labels, we have to enter and exit* dBASE *many times a day, and the extra step is irritating.*

Richard Dumont
Serbrooke, Quebec, Canada

A. It's easy. Just start the program with **dbase /t**. That '/t' parameter will cause *dBASE* to take you straight to its main menu.

PostScript Font Sizes in Windows

Q. *Although one of PostScript's major benefits is the ability to use fonts of any size,* Windows 3.0 *allows only a few sizes to pick from. Is there any way to overcome this limitation?*

Ralph Spitzer
Vancouver, British Columbia, Canada

A. Actually, *Windows* allows you to specify any point size (between 4 and 127 for most applications). If your choice doesn't appear in the size menu, just type it in manually.

The real problem is that *Windows* has screen fonts for only a few point sizes. While type in other sizes is jagged and sometimes unreadable on screen, with a PostScript printer it should still print out correctly. For a closer match between display and printout, install *Adobe Type Manager.* This handy utility generates screen fonts for *Windows* in whatever point size you specify.

WHERE TO BUY

Adobe Type Manager
Adobe Systems, Inc.
P.O. Box 7900
Mountain View, CA 94039-7900
800/344-8335
LIST PRICE: $99
Reader service no. 683

High-Resolution Windows Demands Larger DOS Font

Q. *My* Windows *applications look great in high-resolution, 1024 by 768 super-VGA mode on my 14-inch monitor. Unfortunately,* Windows *uses tiny, unreadable type for DOS applications running in windows. Is there some way to switch to a larger font?*

John Shahabian
Sacramento, California

A. *Windows* includes a larger screen font specifically designed for the IBM 8514/A board's 1024 by 768 mode. You can configure your system to use that font by editing your SYSTEM.INI file.

Look in your \WINDOWS\SYSTEM directory and make sure it contains the files 8514OEM.FON and 8514FIX.FON. If you don't see both files, you'll have to copy them from your *Windows* installation disks: First copy EXPAND.EXE from Disk 2 to your C:\WINDOWS directory. Then, if you have 5¼-inch disks, put Disk 1 in drive A:; if you have 3½-inch disks, leave Disk 2 in the drive. Enter the command **expand a:\8514*.fon c:\windows\system**, either at the DOS prompt or in the File Run dialog box's command line, to expand the compressed screen-font file and copy it to your hard disk.

(continues)

Now open SYSTEM.INI with *Windows'* Notepad or Sysedit. Find the lines *oemfont=* under the [boot] section and *cga80woa.fon=* and *ega80woa.fon=* under the [386Enh] section, and edit them to read:

oemfont=8514oem.fon
cga80woa.fon=8514fix.fon
ega80woa.fon=8514fix.fon

Save the file, then exit and restart *Windows.* Henceforth, your DOS windows will display in a large, easy-to-read font.

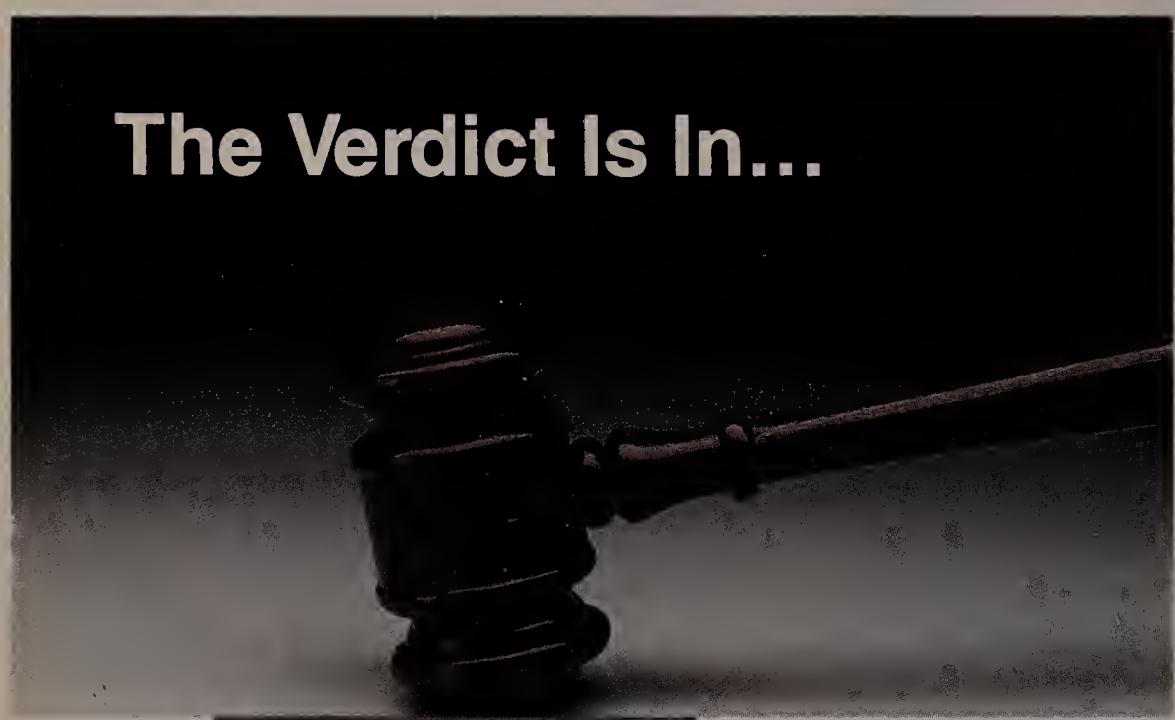
Drive Type Support

Q. *I recently purchased a Seagate ST1144A hard disk drive. When I tried to install the drive in my AT clone, I found it didn't match any of the drive types listed in my system's SETUP program. Do I need a ROM upgrade or is there another solution?*

B. G. Grimsley
Farmington, New Mexico

A. Because there's still no industrywide standard for IDE drives, a new BIOS chip that specifically supports your drive is one solution. An easier way is to use *Disk Manager,* an automatic hard disk configuration and formatting utility. While a copy of that program may have been included with your drive, Seagate upgraded the 1144A and several other IDE drives without upgrading *Disk Manager.* The commercial version of *Disk Manager* now supports the 1144A and most other IDE drives.

The Verdict Is In...



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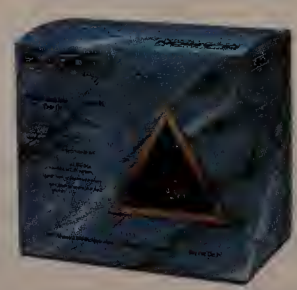

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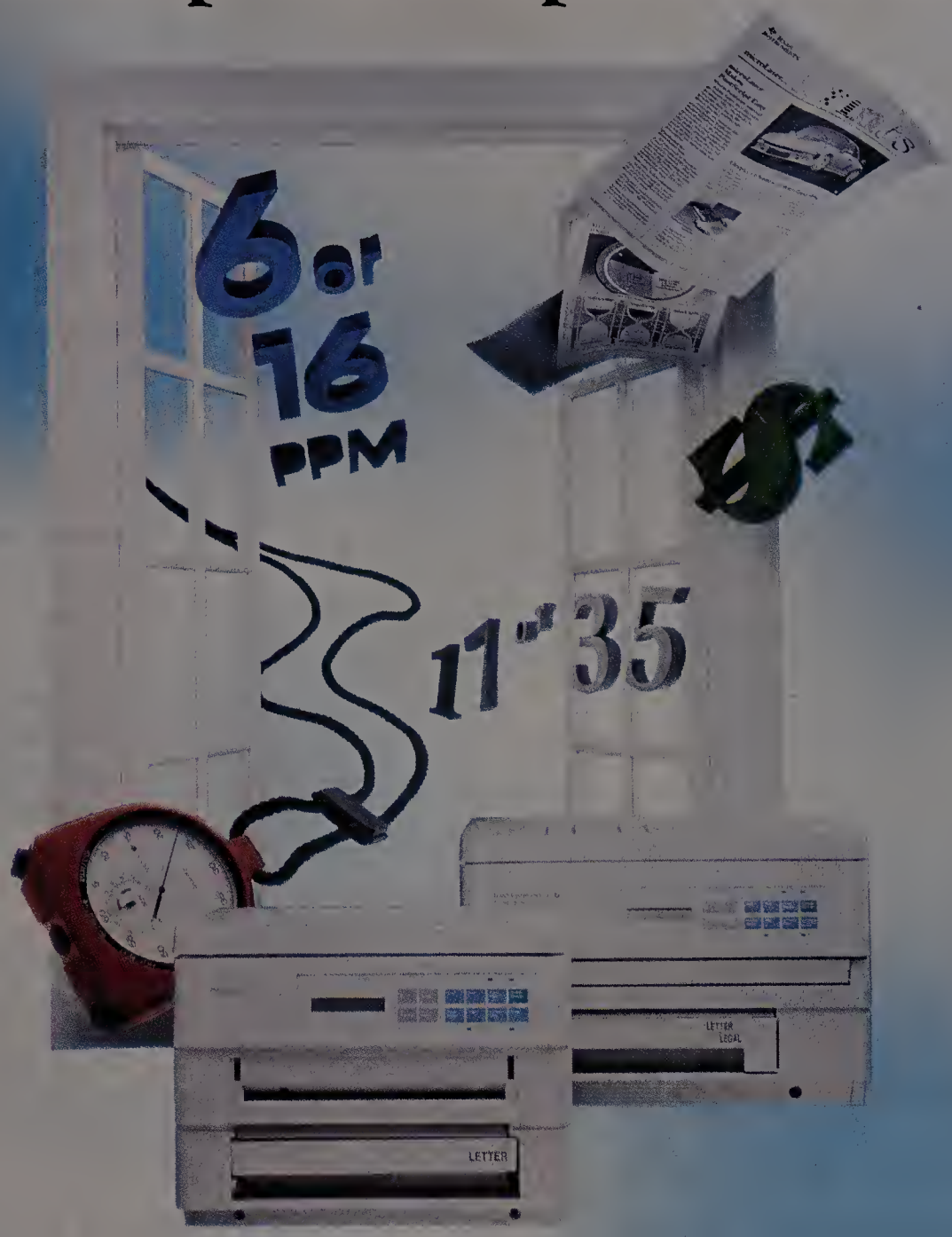
POWER TIP NO. 202

Using WordPerfect's Equation Editor to Print Large Fonts

You may not have enough memory in your Hewlett-Packard LaserJet–compatible printer to handle large fonts, but you can still use *WordPerfect 5.1's* equation editor to trick your printer into printing a large font. Use this sequence to get into the equation editor and set the point size for your graphical font: **<Alt>-<F9>ece<Shift>-<F1>gs.** Now enter the desired point size, and press **<F7>** to get back to the equation editing screen. Type the text, then press **<F7>** twice again to return to the document screen. Now you can preview and print.

Tammy Barton
WordPerfect Technical Support
Orem, Utah

TI microLaser™ printers open new windows.



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TEXAS INSTRUMENTS

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Ontrack Computer Systems Inc.
6321 Bury Dr.
Eden Prairie, MN 55346
800/752-1333, 612/937-1107
LIST PRICE: $124.95
Reader service no. 684

Peripherals in Search of Interrupts

Q. *I recently purchased a 33-MHz 386 and a full set of peripherals: two printers, a plotter, a scanner, a fax board, and a serial mouse. After installing the fax and scanner boards, I find there are only enough interrupts to install two of the four ports I need to hook up my peripherals. Is there a way to configure the machine to handle all this equipment?*

Richard Barnhart
Belmar, New Jersey

A. Check your boards and see if any of them can be configured to one of your system's higher interrupts, IRQ9 and up. If two of your boards can use the higher interrupts, you won't need any additional hardware. Unfortunately, most boards support only those interrupts found on the original PC, IRQ7 and below. If that's the case here, switch to a bus mouse to free up IRQ3. Then

POWER TIP NO. 203

Quick Leader Dots With WordPerfect 5.1

If you need to generate leader dots that run flush to the right margin, the fastest, easiest way is to press <Alt>-<F6> twice with your cursor positioned on the line where you want to start your leader dots. To create a leader dot that runs to the center of the line, press <Shift>-<F6> twice.

Vivek Wig
Moreno Valley, California

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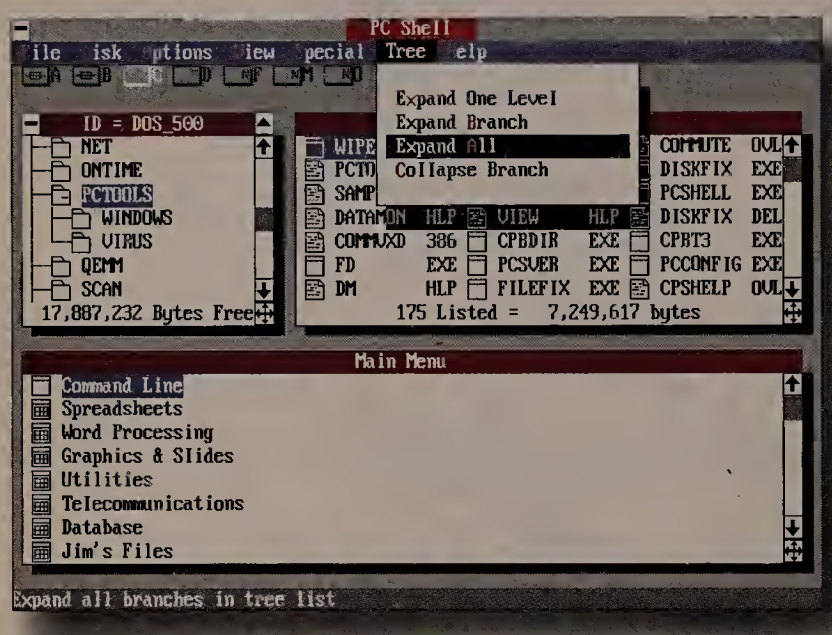

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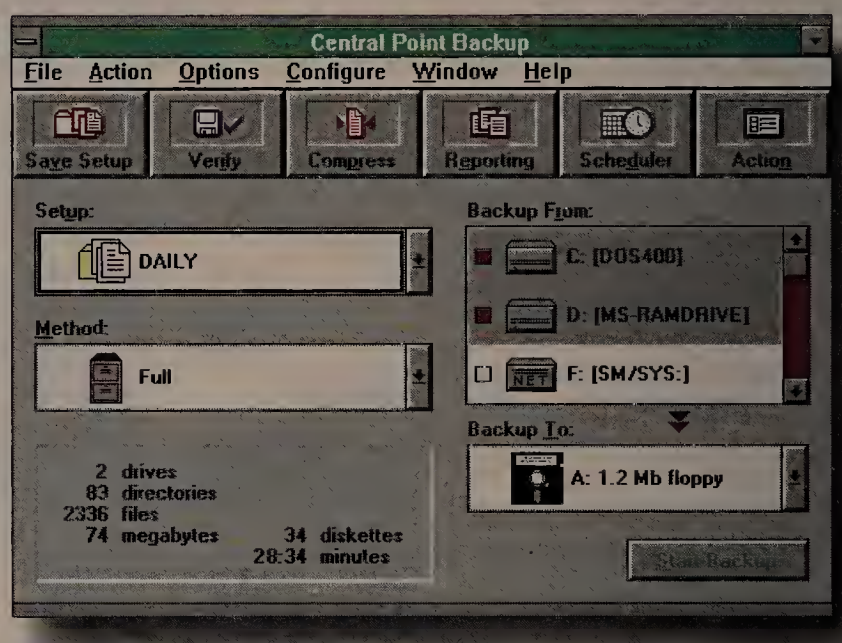

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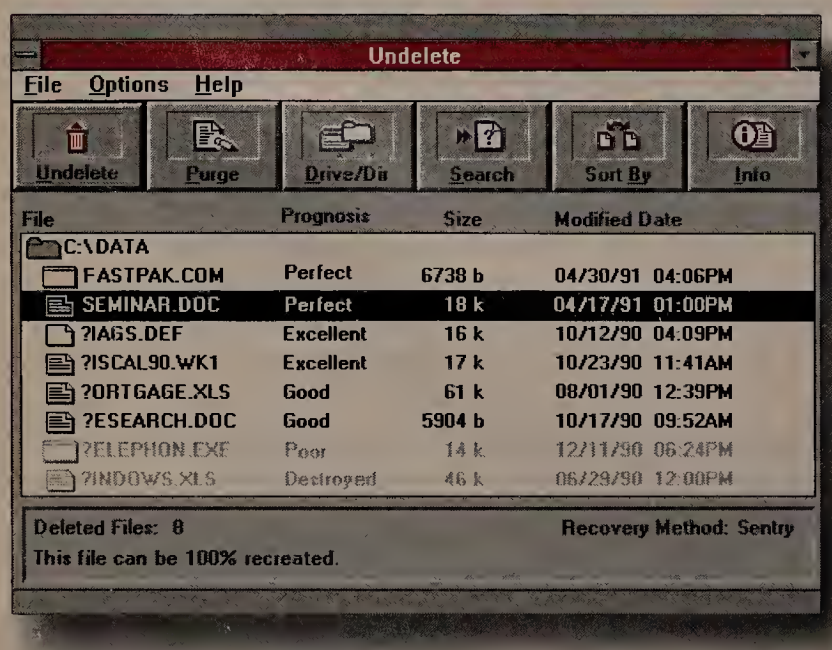

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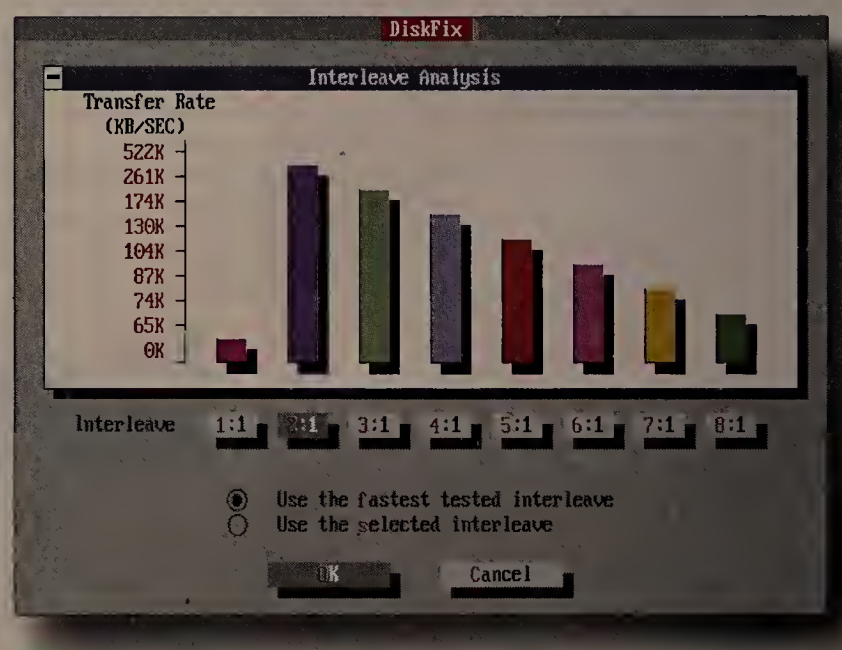

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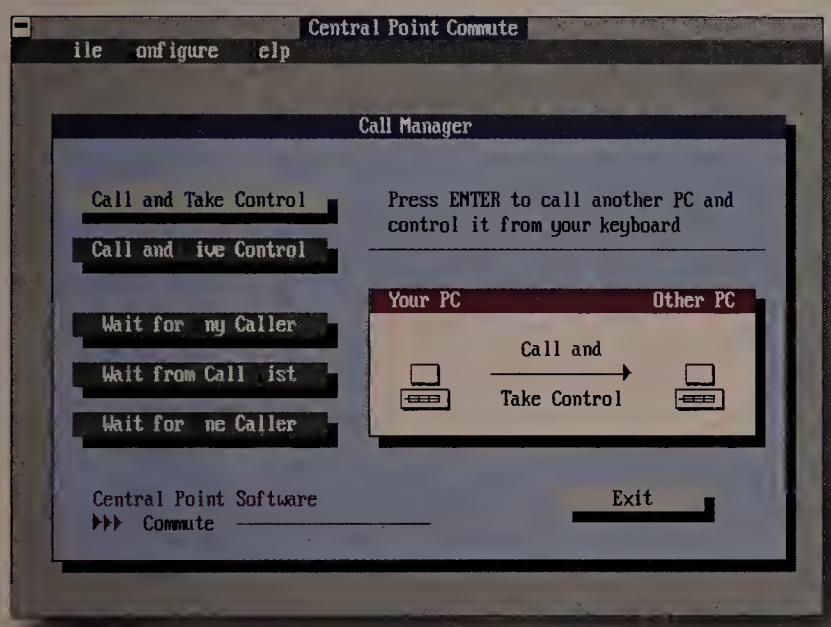
Brad Silverberg, VP for DOS & Windows, Microsoft (Oct. 1990)



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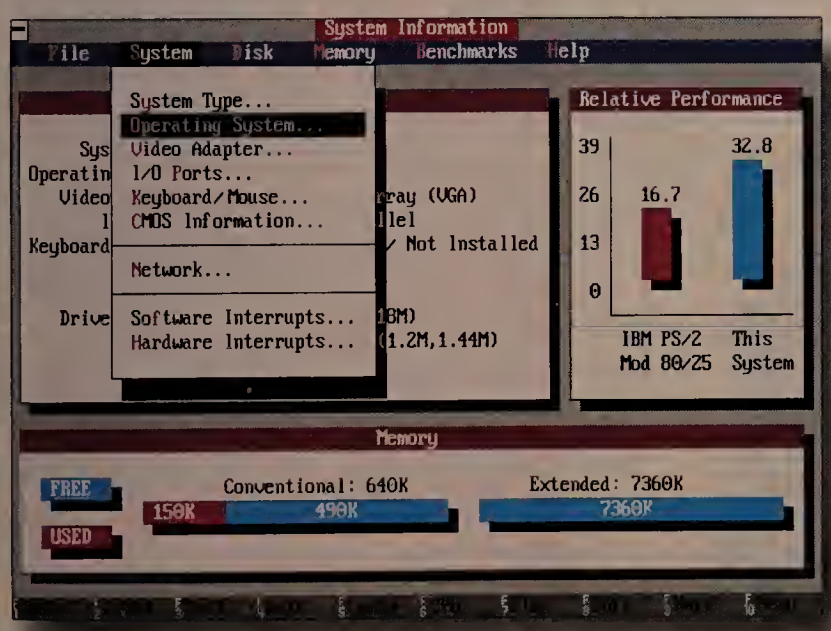

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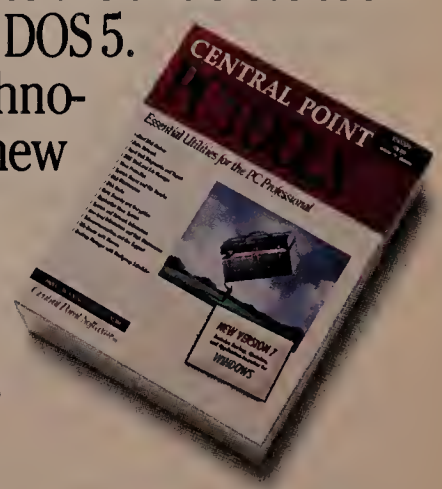

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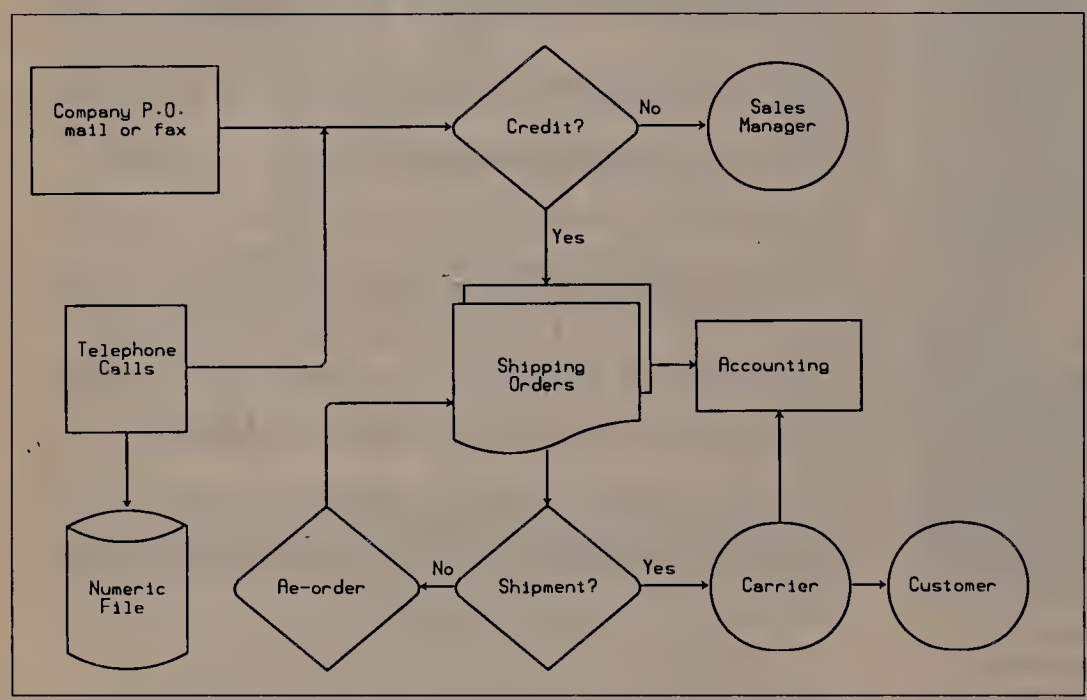

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free up IRQ5 by disabling LPT2, and hook both your printers to LPT1 via an electronic switch box. (Avoid mechanical A/B switches, as the line noise generated by some can damage a printer's electronics and invalidate its warranty.) Alternatively, you could exchange one of your boards for one that can use a higher interrupt.

Recycle Your PCjr

Q. *I'm one of the poor souls who purchased an IBM PCjr. Can I use any of its components with another system? If so, where can I find adapters for the jr's nonstandard cables?*

Charles A. Si Harris
The Colony, Texas

A. Amazing as it sounds, there may be as many as 300,000 PCjrs still in use at this time. In any case, that means that there's still an active community of jr users. You can plug into their grapevine through the monthly *Jr. Newsletter,*

POWER TIP NO. 204

Tinting Your WordPerfect Windows

If you commonly work in two windows at the same time with *WordPerfect*, giving their backgrounds different colors will help you keep track of which file you're working on. At the document screen, press <Shift>-<F1>dcs followed by <Shift>-<F3> to change to your second window. Press <Cursor Right> to place the cursor on Normal Background. Choose the desired color from the menu at the top of the screen, and press the corresponding letter. Press <F7> twice to get back to editing mode.

Ross A. Buck
Dhahran, Saudi Arabia

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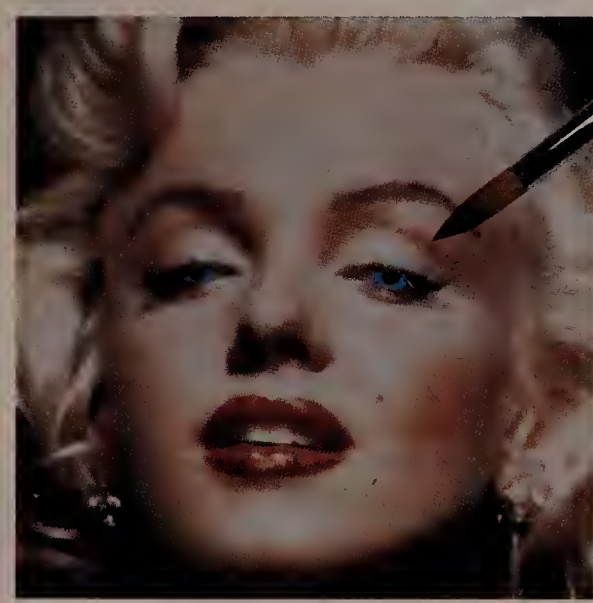

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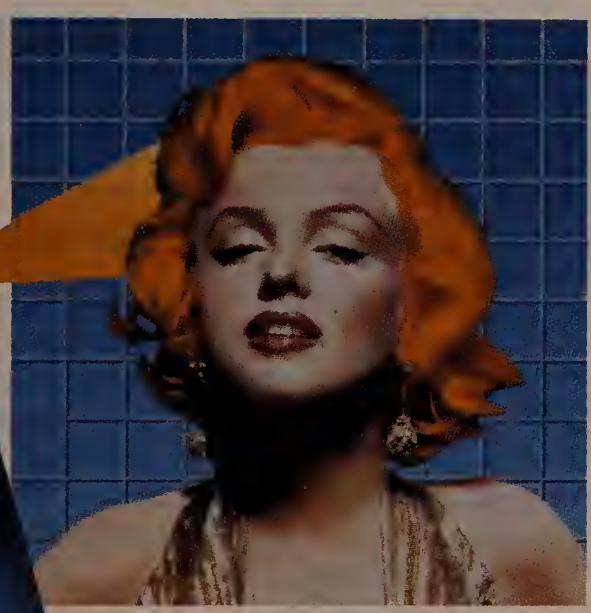

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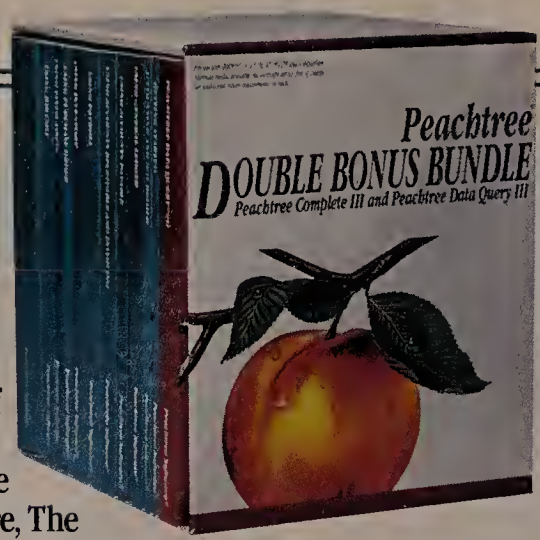

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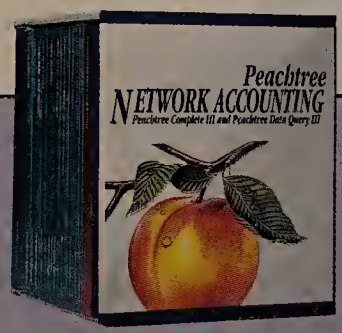

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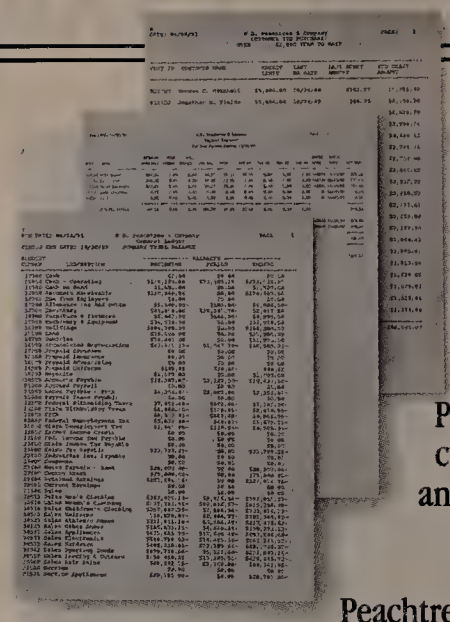

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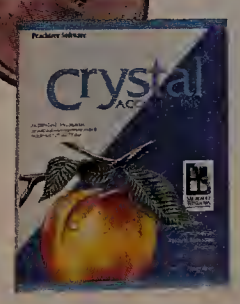

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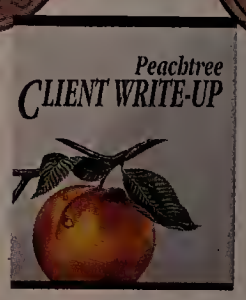

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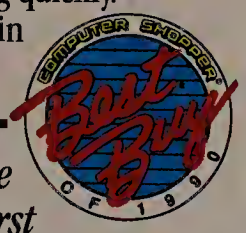

"I have installed and set up Peachtree for many small businesses. After the first 30 days, I become the Maytag® Repairman."

–Karen R. Gooding
Economy Bookkeeping, Hilton Head Island, SC.

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- One to 13 user-defined fiscal periods.
- Comparative financial statements.

Accounts Payable
- Partial payment of invoices.
- Cash requirements forecasting.
- Check printing from 9 different bank accounts.
- Prints miscellaneous and interest 1099s and handles magnetic media.

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- Issues purchase orders for either stocked or non-stocked items.
- Inventory update upon receipt of items.
- Ability to generate A/P invoice from purchase order.

Payroll
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- Optional Peachtree Complete Tax Service available.

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- Optional serial number tracking.
- Supports assembly and disassembly capabilities.

Job Cost
- Tracks costs and profitability on a job-by-job basis.
- Interfaces with A/P, A/R and Payroll.

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- Mid-quarter convention.

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"I would highly recommend Peachtree... a peach of a program."

–New Jersey PC User Group News

In a recent survey by *Accounting Today* magazine, Peachtree was recommended by accountants almost twice as often as the nearest competitor. When *Reseller Management* asked resellers which accounting package they recommend, Peachtree came out on top again, with 25% of resellers recommending it.

Most importantly, users recommend Peachtree! Based on reader response, *Computer Shopper* named Peachtree Software the Best Buy in Accounting Software for 1990. More than 400,000 small businesses trust their accounting to Peachtree■

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–Jack J. Neymark
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Circle 144 on reader service card

which includes ads for PCjr-related products and maintains a catalog of "classic" shareware programs that run on 128K systems. We've also identified the following couple of BBS's and active user groups for additional jr support. Good luck.

WHERE TO BUY

Atlanta PCjr Users Group
6575 Amberglades Ln.
Atlanta, GA 30328
404/255-2731

Jr Blue BBS
209/745-9284 (5 p.m.–8 a.m.)

Jr. Newsletter
P.O. Box 163
Southbury, CT 06488

Metro PC Jr. Users Group
213 Cedar Ave.
Gaithersburg, MD 20877
301/926-4185 (12 p.m.–9 p.m.),
301/948-8498 (24-hour BBS)

Stop That Blinking Cursor Revisited

In our May column, we told reader Christopher Kocks there was no way to stop a PC's cursor from blinking because the video hardware doesn't permit it. Several readers wrote to inform us of two memory-resident utilities that create nonblinking cursors. Both *No-Blink* and *No-Squint II* use the same clever approach to get around the hardware limitation: They turn off the hardware cursor entirely, then display the character at the cursor position in contrasting colors or inverse video. Thanks to readers Eric Hansen, Richard Hathaway, R. C. Spencer, and Vernon Shetley for setting the record straight.

WHERE TO BUY

NoBlink
Instant Replay Corp.
4525 S. Wasatch Blvd. #335
Salt Lake City, UT 84124
800/388-8086, 801/272-0675 (fax)
LIST PRICE: $49.95
Reader service no. 685

No-Squint II
SkiSoft Publishing Corp.
1644 Massachusetts Ave. #79
Lexington, MA 02173
800/662-3622
LIST PRICE: $49.95
Reader service no. 686

Karl Koessel is the technical editor and Robert Lauriston a contributing editor for PC World.

How does...? What can...? Should I...? Send your PC questions to The Help Screen, PC World, *501 Second St. #600, San Francisco, CA 94107-1431; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). Questions with the broadest appeal will be published.*

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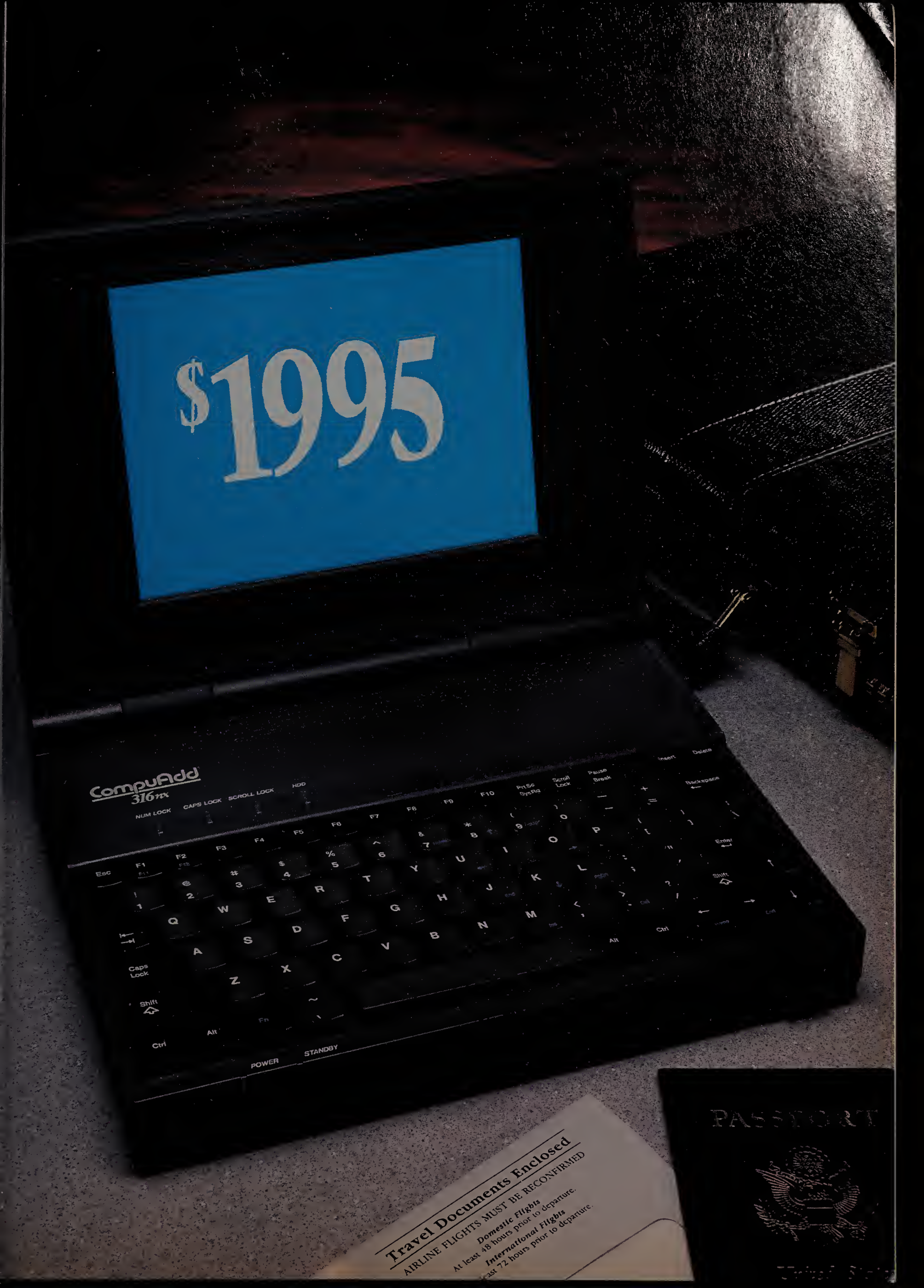
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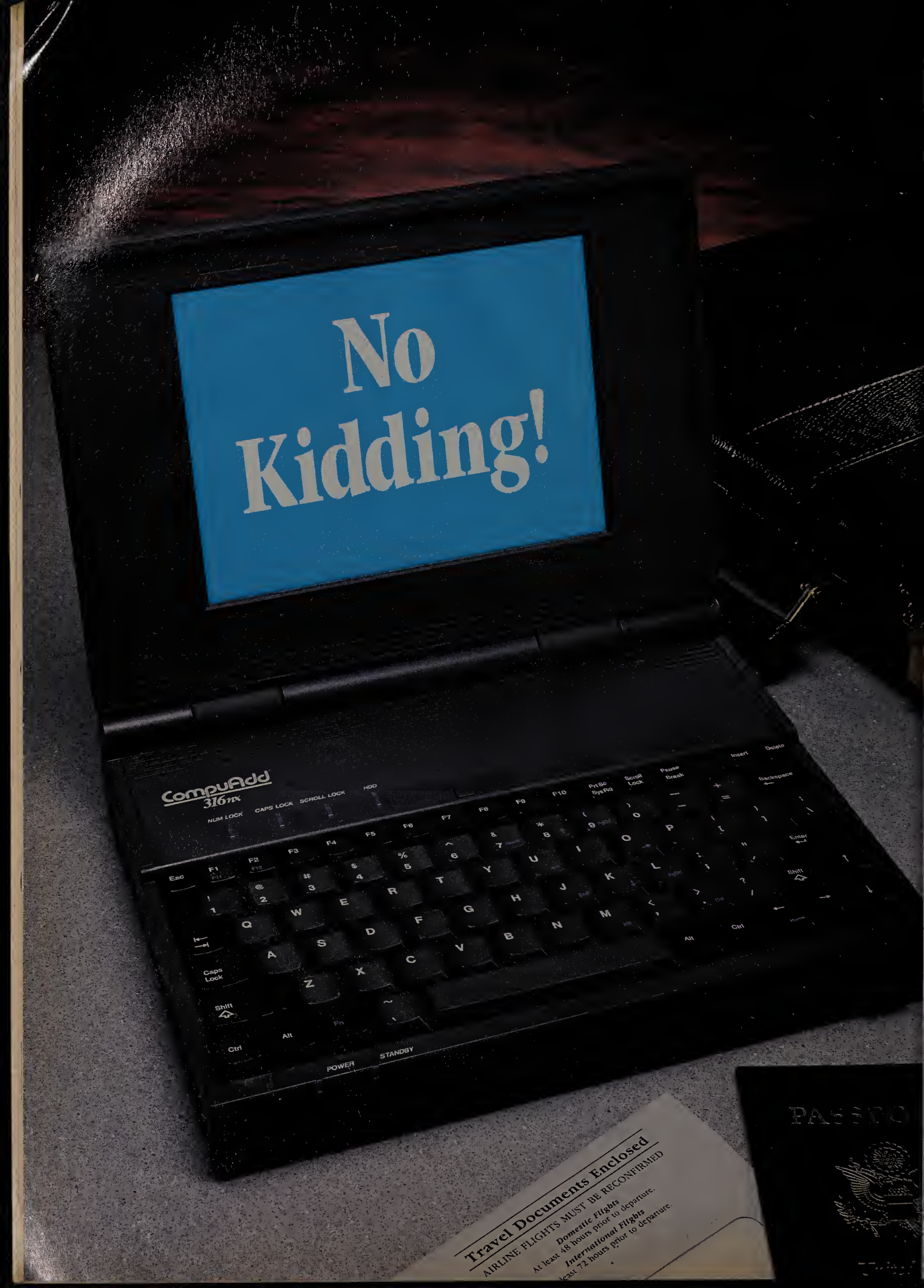
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Some notebook PCs carry a hefty $5,000 to $6,000 price tag. So at a slimmed down $1,995, the 7 pound CompuAdd 316nx notebook PC is more attractive than ever.

But reduced price doesn't mean reduced performance. The CompuAdd 316nx uses the Intel 16MHz 386SX microprocessor with the internal 32-bit processing required for optimal multitasking and high-performance computing.

You get excellent data handling and storage with a 30MB standard hard drive and a 3.5" 1.44MB diskette drive. The CompuAdd 316nx is already loaded with CompuAdd MS-DOS 4.01 and 1MB of memory.

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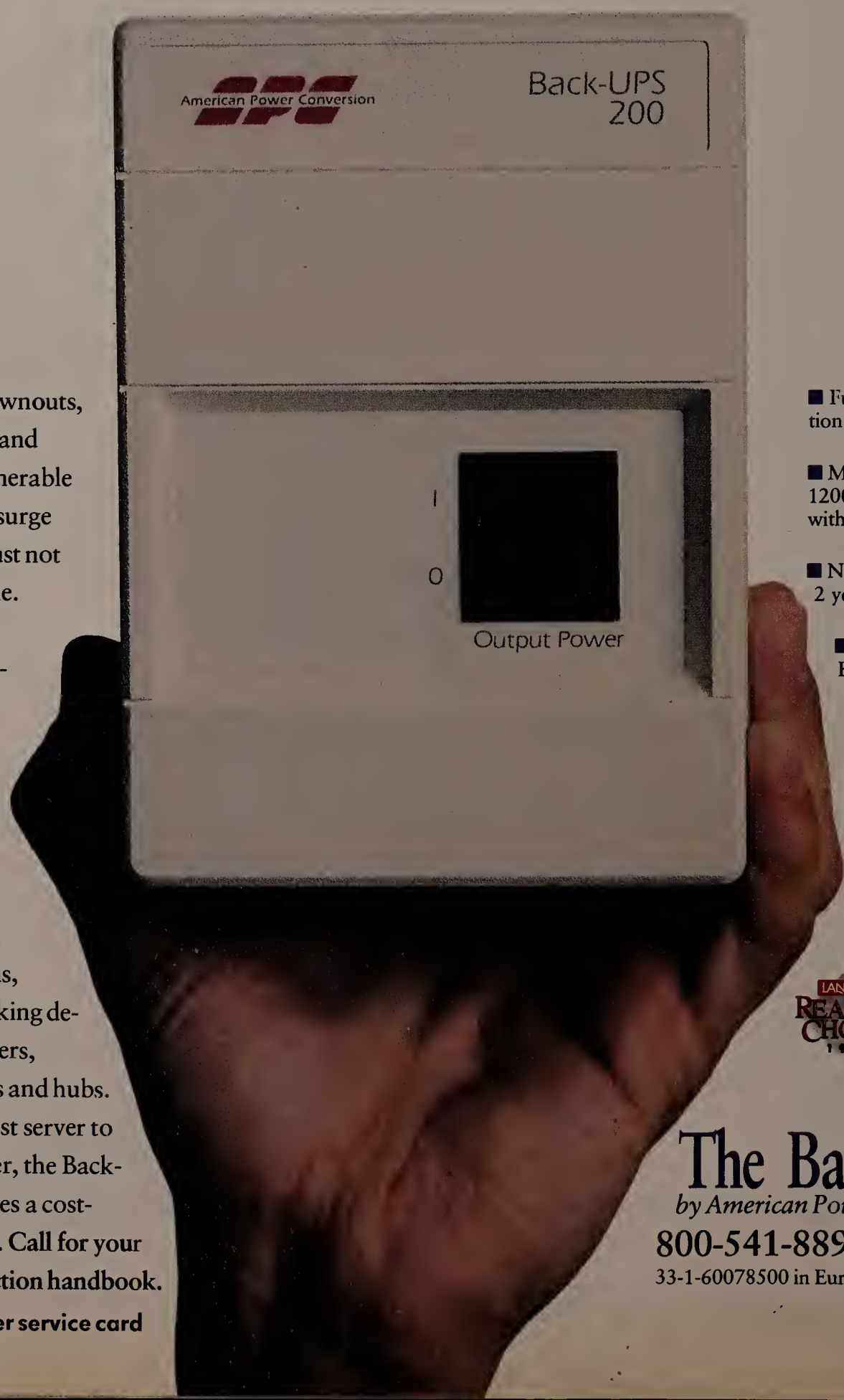

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LAN TIMES READERS CHOICE 1990 LAN TIMES READERS CHOICE 1991

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NETWORK Q&A

Hook Your LAN's E-Mail System to the World

Keith Nickerson

Q. *We're planning to link the LANs in our regional offices with the gateway software available for our E-mail program. We also want to provide people on the road with dial-in access to E-mail from their laptops. Would we be better off using a remote-control package such as* pcAnywhere *or the special remote version of our E-mail program? What kind of PCs and modems should we use for the gateways?*

Charles Wiggins
Phoenix, Arizona

A. It's better to use a special remote E-mail package than a general-purpose remote-control program. Remote E-mail packages allow remote users to create and edit messages off line on their PCs, then dial the gateway and transfer messages when ready. This is more flexible for the user and greatly reduces phone-line charges when dialing into the LAN long distance. Also, users won't have to learn any new software for remote access—most remote E-mail programs work just like the local version.

The hardware requirements for mail gateways are not that stringent. For the gateway PC, you can use any 286 (or better) system that has 640K of memory (XT- and PC-class systems may not be able to keep up with today's faster modems). No hard disk is needed.

While a standard 2400-baud modem is quite sufficient for straight-text E-mail transfers, it may prove too slow if you have unusually heavy mail traffic or regularly attach large files to your E-mail messages. Using a faster modem will speed things up, and it will eventually pay for itself in reduced long-distance charges. Remember that a faster modem is a benefit only if it's matched by an equally fast modem at the other end. Your best bet is to start off with 2400-baud modems with V.42bis hardware compression, then keep an eye on your phone bill and upgrade to 9600 baud if that seems justified.

In any case, use external rather than internal modems. You can view the LEDs on the modem to monitor the transfer of data, and if you need to reset the modem, switching an external modem on and off is much easier than rebooting the gateway PC.

For each gateway you set up, you'll need a dedicated phone line with its own direct-dial number. Because the LAN-to-LAN gateways dial each other automatically, you can't route them through your central switchboard or voice-mail system. If you have many remote users, consider setting up a toll-free 800 number as the dial-in line.

An alternative to dedicating a PC as a mail gateway is to use a "PC-on-a-board." These boards have everything that you need for a remote communications processor: memory, I/O processor, and LAN interface. Simply install one of these boards in an expansion slot in your file server, then attach a modem to its standard COM port. When you bring up your file server, the board is booted as a diskless workstation, and the communications software is loaded by the remote boot file you create through your network operating system software. You monitor the gateway from your workstation via remote-control software.

While a PC-on-a-board may cost as much as a bare-bones stand-alone 286 for the gateway, it's a much cleaner solution. You don't need a separate PC and all its associated cabling sitting in your LAN room. This is a particularly attractive approach if you run several gateways at once (to let several remote users dial in simultaneously, for instance). Several of these boards installed in your file server take a lot less space and power and generate a lot less heat and noise than an equivalent pile of gateway PCs.

Keith Nickerson is the editor of NetWare Advisor *and a member of the publishing team at Business Systems Group, a Houston-based systems integration firm.*

POWER TIP NO. 205

Extra Text Lines for Harvard Graphics Charts

From the looks of it, you can enter no more than three single lines of text in a *Harvard* chart—one each for a chart's title, subtitle, and footnote. That's the amount of space available on the chart's data screen. But the first Titles and Options page gives you room for expansion.

Even veteran *Harvard Graphics* users overlook the single blank space below the 'Subtitle' prompt on Titles and Options page 1 and the two spaces below the 'Footnote' prompt. Fill these with text, and they show up as additional titles on your chart exactly as entered. No need to use the Draw/Annotate command or the *Draw Partner* drawing program to add second and third title lines as separate text objects. You can even use <F7> (Size/Place) to scale and position these text lines independently.

Steve Sagman
New York, New York

Why choose between Adobe's® PostScript® and PCL® when you can choose the Okidata OK!™

With the LaserJet® III, Adobe's PostScript is only available as a costly add-on. And you can't return to PCL without powering down the machine and re-configuring it. The Okidata OL840 gives you PostScript printing right out of the box - and is software-switchable between Adobe's PostScript *and* PCL.

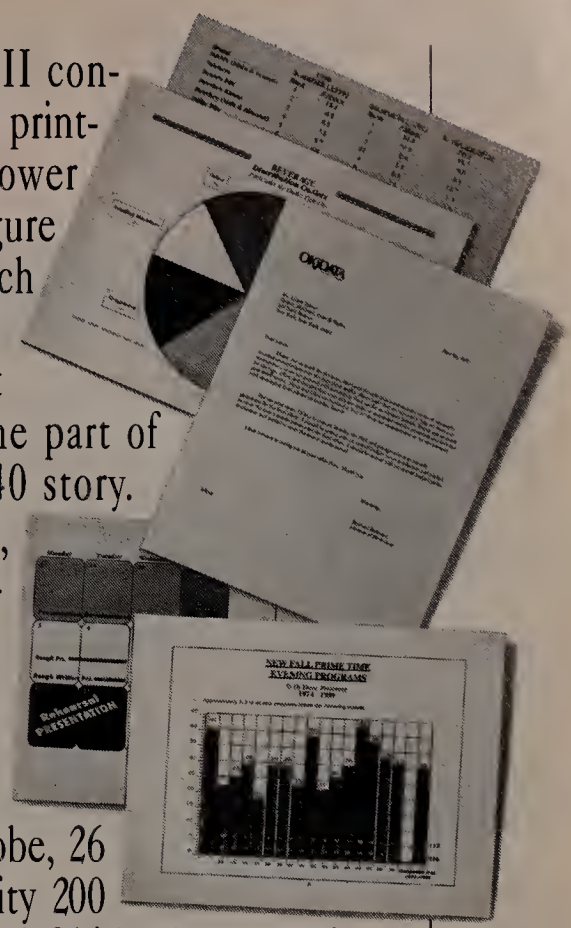
Today, more and more end users are learning of the unique capabilities of Adobe's PostScript, and more and more software packages (over five thousand to date) let you take advantage of the dramatic results PostScript printing can bring to any business document.

Adobe's PostScript Made Easy.

The Okidata OL840 offers the business printer buyer all of the advantages of PostScript printing, with none of the compromises. Unlike the LaserJet III, the Okidata OL840 is PostScript-ready when you buy it - with 35 Adobe type fonts, a full 2 megabytes of installed RAM, and an AppleTalk® Network Interface, all for only $2599*. (Adding all this hardware to a LaserJet III adds over $1000* to their suggested retail price.)

The Best Choice Is Not To Have To Make One.

More important, the OL840 lets your software switch between Adobe's PostScript and PCL. And with Serial, Parallel and AppleTalk interfaces all available, you can keep all your options open - both PC and Macintosh® users can access the same printer. (With a LaserJet III converted to PostScript printing, you have to power down and re-configure the machine to switch back to PCL.)



But PostScript printing is only one part of the Okidata OL840 story. It's a full-featured, Novell® Network certified, 8-ppm work horse with full 300 dpi resolution, a built-in 61-font type library (35 Adobe, 26 PCL), a high-capacity 200 sheet paper tray, and Okidata's no-moving-parts LED printhead - the only one in the industry warranteed for five full years (plus 1 year parts and labor on the printer). You can add a second paper tray to automatically feed alternate letterhead sheets or envelopes (an option the LaserJet III doesn't offer).

Our Most Important Feature: The Okidata OK!

Finally, like every printer Okidata makes, the OL840 proudly wears the Okidata OK! It's our personal pledge to every customer that your new Okidata machine will deliver not just adequate performance, but exceptional performance - and provide not only good value, but outstanding value.

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*Manufacturer's suggested retail price. Dealer price may vary. OL840 pictured with optional second paper tray and mechanism. LaserJet and PCL are Reg. T.M.s of Hewlett Packard Inc. Adobe and PostScript are Reg. T.M.s of Adobe Systems Inc. AppleTalk and Macintosh are Reg. T.M.s of Apple ComputerInc. Novell is a Reg. T.M. of Novell Inc. Okidata is Reg. T.M. and Okidata OK! is a T.M. of OKI Electric Industry Co., LTD. "We don't just design it to work. We design it to work wonders." is a T.M. of OKI America Inc.

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	PacificPage P•E™	PacificPage XL™	PostScript Cartridge
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Money-back guarantee	Yes	Yes	No
PostScript to PCL switching	Yes	Yes	No
Upgrade program	Yes	Yes	No
Warranty	Lifetime	Lifetime	One year

★ Suggested list price of PacificPage P•E cartridge without a 2 MB memory board is only $499.

"PacificPage swiftly and accurately renders some test EPS files that other interpreters distort, and had no trouble with any of the large and complex images I used for testing."

"An Intel i960™ RISC processor on the accelerator board helps the PacificPage XL print graphics more than six times as fast as the HP PostScript Cartridge"

Edward Mendelson
PC Magazine, (June 25, 1991)

Don't settle for less just to buy the Hewlett-Packard name. Ask for PacificPage PostScript® language emulation solutions from Pacific Data Products. You'll get a lot more, for a lot less.

Each PacificPage product for LaserJet® IIP, IID*, III, IIID, and IIIP printers is guaranteed to be completely compatible with all of your PostScript output. If you can create it, PacificPage can print it. If not, we'll give you your money back.

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CONSUMER WATCH

Advice and information for the computer consumer

Shopping for a PC for your home office? Verify that it's Class B certified before you plunk down any cash.

Roberta Furger

FCC Certification—It's Not as Simple as You'd Think

You've read the warnings in the pages of *PC World* before: If you're buying a computer for home use, it must be Class B certified by the Federal Communications Commission (FCC), meaning that it won't interfere with a variety of communications—both emergency and everyday. But putting that guideline into practice isn't as easy as it sounds, especially if you're trying to save money by buying a clone system.

Take the case of Charles Eisiminger, a PC user in West Bethesda, Maryland, who was in the market for a high-end system for his home office. Mr. Eisiminger wrote to *PC World* about his quest for a reasonably priced computer that was Class B certified. But what seemed like a relatively simple purchase wasn't so straightforward after all. Few of the mail-order companies he called could provide him with FCC ID numbers. "How can I find out which machines are FCC Class B certified?" he asked.

Intrigued by Mr. Eisiminger's letter, we decided to see for ourselves how hard it is to buy an FCC-approved computer through the mail. Just like Mr. Eisiminger's, our shopping trip proved to be somewhat less than successful.

We called 22 mail-order PC vendors looking for a 25-MHz or 33-MHz 386 computer for our mythical home office. Only two of the salespeople we spoke with told us immediately that the computers we were considering weren't Class B systems. Everyone else quickly assured us that their computers could be used in the home. One salesperson even said he could "absolutely, positively, unequivocally guarantee" that the computers were Class B systems. He couldn't, however, provide us with the appropriate ID numbers.

In fact, only six salespeople were able to give us the actual FCC identification number. The rest said they didn't have access to that information and questioned why we would want it in the first place. Although everyone agreed to call us back with the details, few were ever heard from again.

The Lesson?

Don't assume that a system has been Class B certified by the FCC just because a vendor says it's OK for home use. If you're buying the system locally, check the back of the computer for an FCC ID sticker. If you don't see one, ask. And if you're buying through the mail, ask the salesperson for the exact FCC ID number before placing an order.

Your research isn't complete when you get the ID number, though. The only way to be absolutely certain that a system is Class B certified is to verify the number with the FCC (see the sidebar

(continues)

Check Out Those Numbers

The FCC provides a bulletin board, the Public Access Link, for anyone wishing to check on the status of FCC certification for PC hardware. To take advantage of the service, you need a modem and a communications package, together with the FCC ID numbers provided by the PC manufacturers.

The phone number for the menu-driven BBS is 301/725-1072. You can log on at 300 or 1200 baud; parameters should be set for N-8-1.

Although this is an excellent resource, the system is not without its problems. Be prepared to try logging on several times. And although you can access the BBS 24 hours a day, users who call between 8 a.m. and 8 p.m. EST are automatically kicked off the system after 5 minutes. Log-on time is unlimited after 8 p.m.

ANTHONY RUSSO

"Check Out Those Numbers"). So we did—and found that two of the numbers we were given were not recognized by the commission.

"A lot of companies get an XT certified and then use [that number] for all their systems," says J. Jerry Freeman, national coordinator of computer marketing enforcement for the Virginia Beach, Virginia, office of the FCC. That's because it can be both expensive and time-consuming for a company to send every model it sells through the certification process.

Although it's illegal for a company to advertise or sell a system for home use if it's not Class B certified, many compa- *(continues)*

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BUG WATCH

Up-to-date information about hardware and software bugs

PageMaker 4.0

PageMaker 4.0 users have had problems trying to print to non-PostScript printers when a document contains table editor files. Specifically, if more than two tables appear on a single page, the first table prints in each table location. A fix is available from Aldus via the CompuServe forum or the customer service department. CompuServe users will find the update, called PCDRV/FLT/UTILS, in Library 11. The fix is also part of the new *PageMaker 4.0 Filter Driver Pack*, available through Aldus's customer service department for $25.

Aldus Corp.
206/628-2320

Fastback Plus 3.0

Version 3.0 of the popular backup utility *Fastback Plus* cannot restore files saved with version 2.09 or earlier. According to Fifth Generation Systems, the incompatibility results from changes made to file-compression routines and is discussed in the documentation. The company is looking into ways to correct the incompatibility but has not committed to offering a work-around.

Fifth Generation Systems
800/766-7283

Publisher's PowerPak Adobe Type Manager for Windows

Attempting to print documents using *Adobe Type Manager for Windows* fonts can result in an Unrecoverable Application Error (UAE) when using a *Publisher's PowerPak* printer driver. The problem occurs only if you installed *ATM* before installing *Publisher's PowerPak*. To fix it, replace the lines in *Windows'* SYSTEM .INI file that read SYSTEM.DRV= ATMSYS.DRV and ATM.SYSTEM.DRV= SYSTEM.DRV with the single line **SYSTEM.DRV=SYSTEM.DRV**, install *Publisher's Powerpak*, and then reinstall *ATM*; you can also simply disable the *Publisher's PowerPak* printer driver.

Atech Software
619/438-6883

Have you run into a software bug or hardware incompatibility? Call us at 415/978-3253 with the details. We'll investigate problems and publish those of broadest interest.

DOS

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tap tap tap
tap tap tap
tap tap tap
tap tap tap
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PC Magazine's Editor's Choice

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Circle 81 on reader service card

nies do so without so much as a slap on the wrist from the FCC. The reason? There are just too many companies out there selling PCs to monitor all of them, says Freeman. "We could be doing this for the rest of our lives," he adds. He says the commission relies on consumers and vendors to report known violations. "Fortunately, the industry is somewhat self-regulating. People are turning their competitors in left and right."

Given the inevitably uneven enforcement, here's what you should know about FCC certification.

Certain types of computer hardware are by their very nature considered Class A or Class B devices. All portable units—from floppy-only 8088 laptops to high-powered 20-MHz 386SX systems—must have Class B certification, since they can easily be brought into a residential environment. Conversely, products such as high-end 486s, tower units, and network cards are typically used only for business and generally carry Class A registration.

Class A units are not tested by the FCC. Class B units, on the other hand, must be tested and certified by an FCC-approved laboratory before they are allowed to carry the appropriate registration identification.

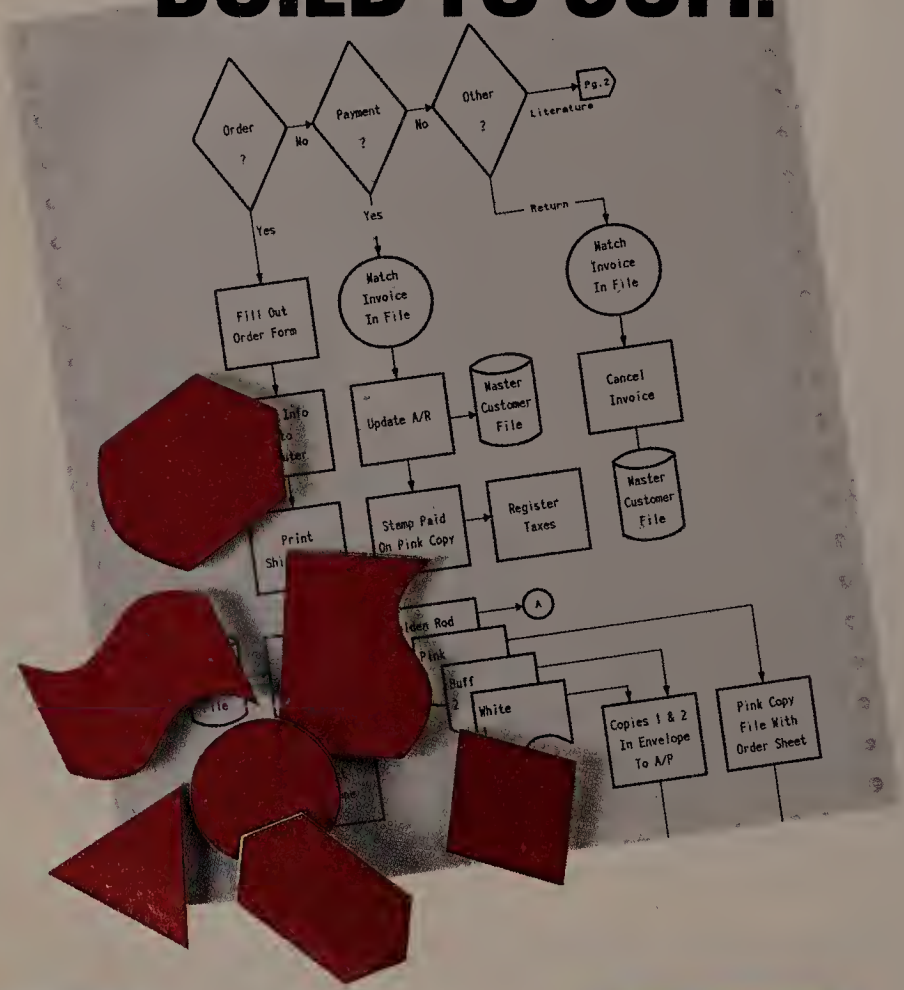
Every Class B computing device should bear a sticker designating it as such. The ID numbers are typically a string of alphanumeric characters and are determined by the manufacturer (so don't expect to see any similarity between ID numbers from different vendors).

Considering the hassles involved with verifying compliance, should you even bother checking into a PC's FCC certification? The answer is yes, and here's why.

If your PC isn't Class B certified, it can foul up the reception on your (or your neighbor's) radio, TV, or cellular

(continues)

BUILD TO SUIT.



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POWER TIP NO. 206

Automatic Sizing for ToolBook Windows

ToolBook windows will size themselves automatically around the *ToolBook* page each time you open a book if you place the following handler into the book's script:

```
to handle enterBook
send sizeToPage
end
```

Jeff Day
Asymetrix
Bellevue, Washington

Introducing Fastback Plus 3.0

Users will automatically like it.

You should like it; after all, your suggestions helped design it. But we didn't stop there. After we made improvements you asked for, like a new windows-style interface, we added plenty of others.

- An archiving feature that erases unwanted files after backup
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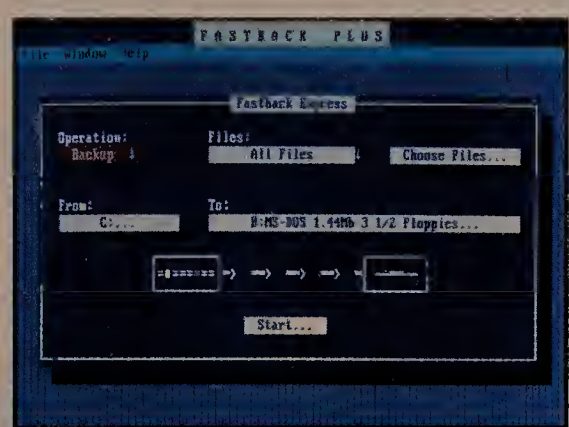
- Increased data compression to a full 80 percent, 15% more than version 2.1
- Appending incremental backups
- dBase III-compatible history file database lets you search for and restore specific files
- Backup support for "Bindery and Trustee" files on Novell Netware 286/386

And like all Fifth Generation products, Fastback Plus 3.0 is automatically covered by a one-year, money-back guarantee. Upgrade now for only $49 and get FREE overnight delivery*. Just mail or fax the attached reply card with your payment to the address or fax number below. Or call us toll-free. This offer is limited to Fastback or Fastback Plus users with a valid program serial number.

The rest of you will like it because it's automatic.

If you're not backing up regularly, you either don't have the right backup program, or you don't have one at all. Fastback Plus 3.0 solves both problems with an entire program full of time and effort-saving features that make backing up so automatic, you can literally do it in your sleep.

- Scheduler and macro recorder for fully-automated, unattended backups
- Macro editor in plain English instead of DOS commands
- Optional password protection with DES file encryption capability
- New easy-to-use, windows-style interface with Express Menu
- Advanced error correction for recovering data from damaged disks



The new fast, simple Express Menu.

And these are just a few of Fastback Plus 3.0's new features. Now more than ever, there's really no excuse not to back up your data. Because if you don't want to do it, this program will do it for you. Automatically. For more about Fastback Plus 3.0, call the toll-free number below.

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POWER TIP NO. 207

Free Your Hard Disk of Icon Libraries

If you run lots of DOS applications under *Windows*, you may have replaced the generic icon Microsoft supplies with snazzy images from other icon libraries, such as *Icons 300+* or the *Icon Pak* series. But using these packages can soak up a lot of disk space, as most icon collections come in the form of space-consuming EXE or ICO files. So free up some disk space by erasing the icon file once you've attached the new icon.

Robert Luhn
Contributing Editor

phone. More important, however, it can also interfere with emergency communications, costing police, fire, and paramedic services valuable time circling the block trying to find the right address because your uncertified home computer is blocking their radio transmissions.

Finally, it comes down to getting what you pay for. If you're shopping around for a computer to use at home, aren't you entitled to proof that the system you're paying thousands of dollars for has been approved for that purpose?

SHOP TALK

Good Product but Questionable Service

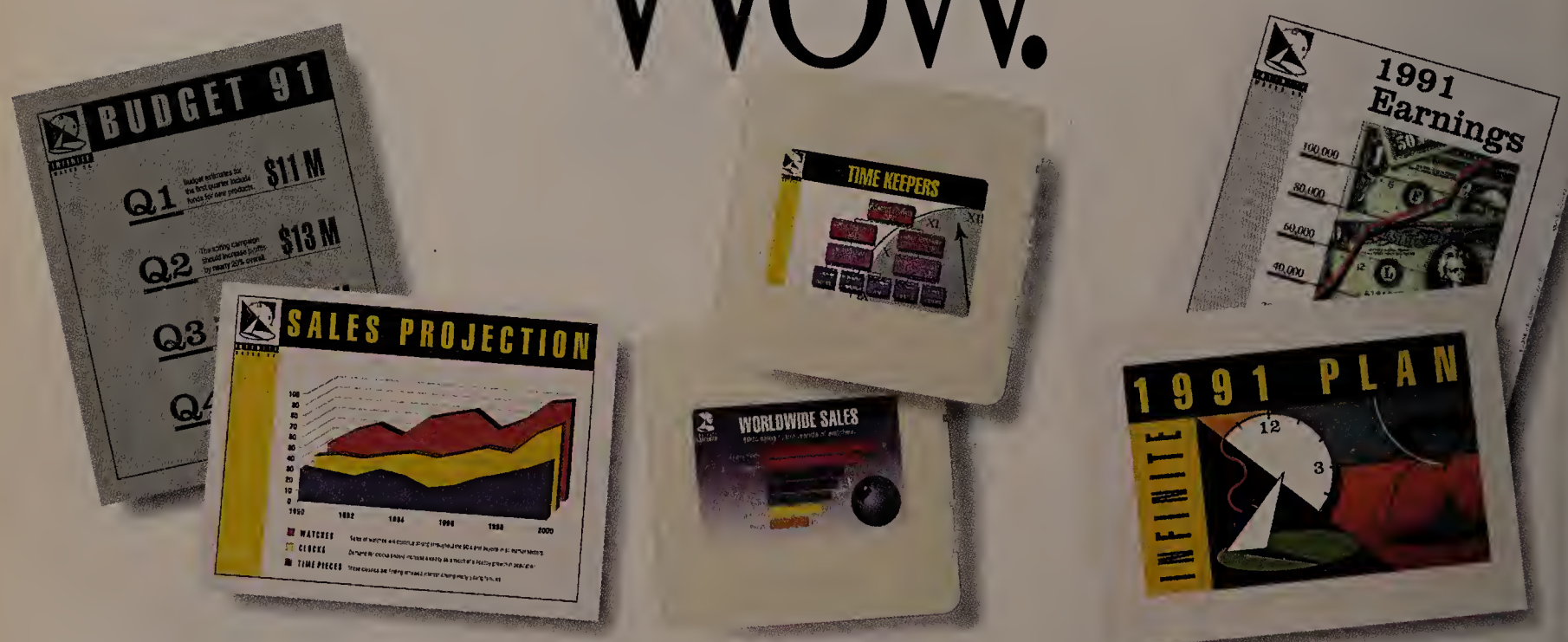
I purchased Atech's *Publisher's Powerpak* after reading George Campbell's article ["Easy Fonts for Great-Looking Documents," January 1991], in which it won a Best Buy. After giving the software a workout and having problems getting the *Powerpak* driver to print in a straight line, I contacted Atech's technical support department.

I was told by the technical support staff that Atech had the same printer (a Citizen GSX-140) in-house and that it worked just fine. I was then asked to send hard copies illustrating the problems I was having. I had not heard a reply over one week after I sent in the requested information, so I called them. I was unable to reach anyone, however, and asked for someone to return my call. They called back and gave me three possible ways of correcting the problem. None of the solutions worked, and the technical support staff requested that I send both electronic and hard copies illustrating the problems I was having. I did so and still haven't heard back.

Sarah Mangum
Austin, Texas

Atech responds: While we have always made great efforts to provide cus-

Wow.



Great presentations are now as simple as pointing and clicking on icons. Because APPLAUSE II® automatically converts your data into any of 37 different chart types—including bar, line and pie charts. Word and organization charts are a snap too.

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Circle 9 on reader service card

tomers with the best service possible, the success of *Publisher's Powerpak* and the resulting influx of technical support calls caught us off guard.

But as a result of customer feedback, Atech's technical support department was completely rebuilt on May 1. A new, highly trained technical support staff has been brought on board so customers can get the solutions they need the first time they call. If we cannot help customers immediately, we will make every effort to get back to them in one day or less with the correct solution.

As for Ms. Mangum's difficulties, we did our best to rectify her problems. Since we were unable to help her, we have offered to refund her money.

Robert McCulloch
Manager, Technical Support

Product Substitution Policy Questioned

Robert S. Davies of Pensacola, Florida, ordered a KLH laptop from Damark International that was advertised in *PC World.* When he received the package from Damark, however, he found that he'd been shipped a Goldstar 386SX laptop instead.

In a letter to Damark, he wrote, "I spoke with customer service and was informed that your catalog states that Damark reserves the right to substitute a product of equal or better value. No such statement was made in the advertisement in *PC World.* I feel that substituting a product without the prior consent of the customer is highly unethical."

According to Joan Kaye, consumer affairs specialist for Damark International, space constraints prevented the company from noting its substitution policy in display ads, such as the one Mr. Davies read in *PC World.* She adds that Damark substitutes a product of equal or better value only when there will be a long delay in shipping the ordered product or when the ordered product be-

(continues)

POWER TIP NO. 208

Stretch for a Quick Fit With Corel Draw Clip Art

When you import clip art into *Corel Draw,* it's not usually sized to fit. But zooming out, shrinking or expanding the clip art, and then zooming back in wastes time. If your graphic is square, you can do a quicker job if you press <Ctrl>-Q and insert numbers either smaller or larger than 100 percent in the 'stretch horizontally' and 'stretch vertically' boxes. As long as the numbers in each box are equal, only the size will change.

Dwayne J. Sye
Swartz Creek, Michigan

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comes unavailable. The company is currently developing a program of notification prior to shipment for substituted items and has begun mentioning its substitution policy in its display ads.

Should Developer Honor Out-of-Date Upgrade Offer?

I recently purchased ZSoft's *Publisher's Paintbrush* version 1.64. The box included an upgrade offer from ZSoft stating that for $55 I could get a one-time upgrade to the latest version. So I sent in the form, along with an authorization to bill my charge card. Within a week I received a call from ZSoft saying it would cost me $75, plus $7 for shipping and handling, to get *Publisher's Paintbrush 2.0* (the latest version).

I feel that a software company should honor any offers that it includes in its packages.

Regi Soolook
Fairbanks, Alaska

ZSoft responds: Mr. Soolook was caught in the transition between [the discontinuation of an] old product and the introduction of a new or replacement product. ZSoft has not actively marketed or advertised *Publisher's Paintbrush 1.64* in more than 12 months.

Publisher's Paintbrush 2.0 is, by ZSoft standards, a completely new product and not an extension of version 1.64. It has undergone a complete redesign and was rewritten as a *Windows 3.0* application. Our sales staff was instructed to sell it as a new product, and an upgrade charge of $75 was determined. Our mistake, obviously, was electing to call this new product *Publisher's Paintbrush* at all.

Even though we were diligent in working with our distributors to phase out the old product while introducing the new one into the channel, there were obviously some copies remaining on dealer shelves. Mr. Soolook purchased one of those copies containing a one-time $55 upgrade coupon. We will happily reimburse Mr. Soolook $27.

Patricia E. Parker
Director of Marketing

Editor's note: Consumer Watch *periodically hears from people who, like Mr. Soolook, try to take advantage of a special offer, only to find that the developer considers the offer out-of-date. While it is unavoidable to have packages on store shelves beyond an expected date, developers should make a practice of either honoring all coupons or including an expiration date.*

Think you've gotten a raw deal—or a great one? Send the details to Consumer Watch, PC World, *501 Second St. #600, San Francisco, CA 94107; MCI Mail PC World Editorial; CompuServe 74055,412; or 415/442-1891 (fax). We'll investigate complaints and publish letters with the broadest interest.*

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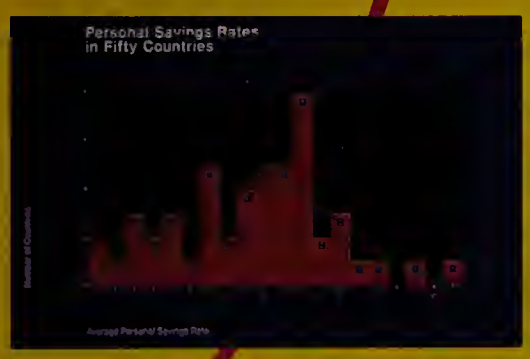
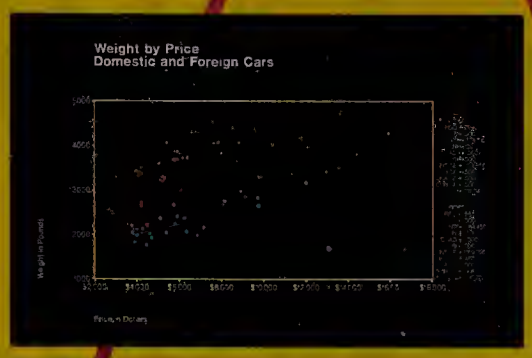
e Accessibility of SPSS makes it ideal beginners and advanced users alike. ith its straightforward menus and con-xt-sensitive help and statistical glos-y, SPSS gets you started fast. And with help of our time-saving programming ilities, including macros and a matrix guage, you'll have the power to go eper even faster. And regardless of ur experience with statistics, you'll supported by the documentation and ining that's set the industry standard over 25 years. Documentation that FoWorld calls "The Best in the siness."





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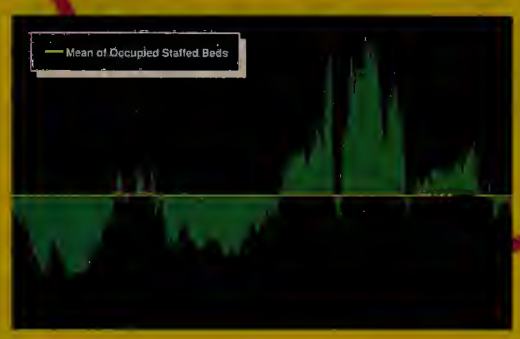

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MANAGER'S FILE #5

Maintenance Contracts: Yes or No?

Whether you manage a small business with just a few stand-alone PCs or a large department with dozens of computers hooked into a local area network, keeping everything running smoothly and avoiding costly and lengthy repairs is of paramount importance. As PCs are used more strategically, having a system down for a few hours—let alone a few days or weeks—is not acceptable.

Worry-Free Maintenance

Maintenance contracts, which require a service firm to handle all repairs for a set fee, appeal to many managers who don't want to worry about the logistics of getting a broken PC or peripheral fixed. Similarly, companies for which a guaranteed response time on repairs is critical but that lack in-house expertise to handle the work themselves can also benefit from off-loading the responsibility to a service firm.

"Service contracts make sense for a company with no technical support staff," says Scott Davis, who manages the roughly 100 computers at the Fred Hutchinson Research Center in Seattle. If a dealer has installed all your hardware and software, you may want to have the same dealer handle the repairs, he adds.

But service contracts aren't for everyone. Some firms prefer to develop the in-house expertise necessary to diagnose and service ailing systems —and they're finding that doing so can be cost-effective. Davis's organization, for example, was able to lop nearly $40,000 off its annual maintenance costs simply by performing most of its repairs in-house.

Many companies are opting for a mixed approach, handling repairs on a time-and-material basis for systems and peripherals that aren't critical, but paying for maintenance contracts on equipment that must be kept running at all times.

Service contracts are available primarily through two sources: local and national third-party maintenance organizations—such as TRW, Sorbus, and GE Computer Service—and local PC dealers. Briggs and Morgan, a St. Paul, Minnesota, law firm, contracted with a dealer to handle repairs because of the added leverage the service contract provided when making PC purchases. "It's also helped us build a closer relationship with our dealer," says MIS director Wayne Yarmoska.

But not all local dealers are equipped to handle computer repairs. Many dealers don't have the necessary parts inventory or the staff to compete with a national firm's offer of 24-hour service on a wide variety of hardware. (Be aware, however, that many lesser-known brands of PCs and peripherals may not be serviceable through most third-party maintenance companies.) National firms also offer the advantage of being able to service a variety of locations in a consistent manner.

Regardless of whether you choose a national or local firm to handle your computer maintenance, you'll likely be able to negotiate a contract tailored to your specific needs. National firms offer clients everything from mail-in or carry-in service—for companies that simply want a consistent service provider—to 24-hour on-site repair service for mission-critical systems. In general, pricing for service varies depending on the number of units that are under contract and their density (100 units in one location are cheaper than 100 units divided among four offices, for example). You can also expect to pay more for quicker response times.

Is a Maintenance Contract Right for You?

Consider a full-blown maintenance contract on all hardware if...

- ✓ A guaranteed response time is critical.
- ✓ You have several sites and want to ensure consistent service.
- ✓ Your company lacks the technical expertise in-house to diagnose problems and repair systems.
- ✓ You don't want to be in the business of computer support.
- ✓ The size of your company does not justify an in-house support person.

Investigate a contract for critical systems only, such as file servers, if...

- ✓ You have a majority of newer, more reliable systems and peripherals.
- ✓ You can rely on prompt service through a local repair center on a per-incident basis.
- ✓ Your company has enough computers to justify a support person *and* you want to manage your own repairs.

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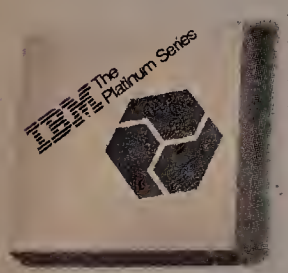

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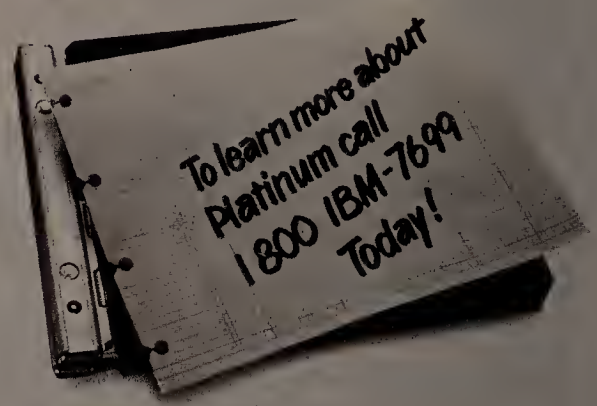

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Circle 97 on reader service card

Edited by ERIC BENDER

Are Shell, Task Swapper Worth the Trouble?

Users Give Thumbs-Up to DOS 5.0

Wanted: More Automation for Memory-Tuning Tricks

To avoid the problems plaguing the last major release of DOS, Microsoft sent out more than 7000 beta copies of DOS 5.0. Early adopters agree that the new release offers plenty of advantages to just about every user—although they also have some quibbles.

"DOS 5.0 does right what 4.0 tried to do," sums up Rich Eisenman, information systems manager at Manufacturers Hanover Trust, in New York.

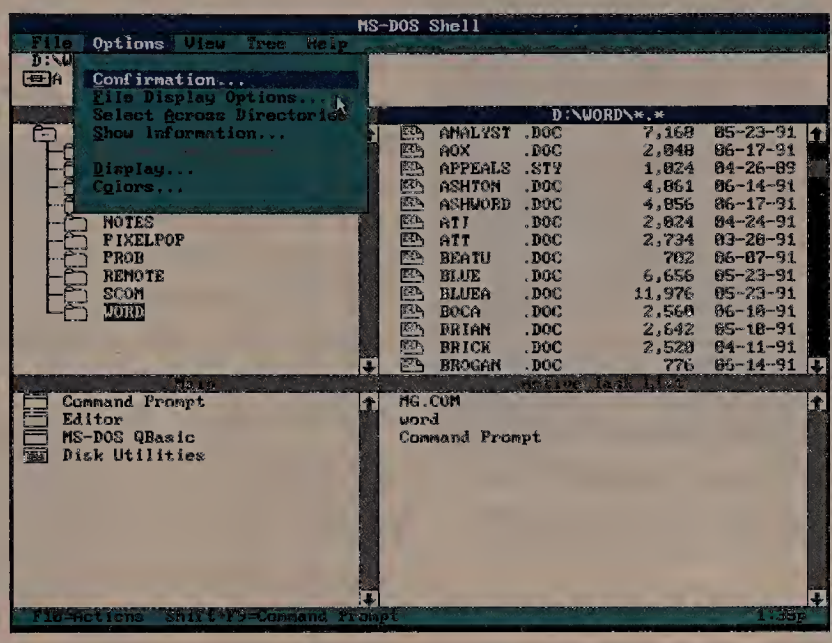
Thanks for the Memory

Early users cite better memory management as 5.0's biggest benefit. "It runs like gangbusters on a 286," says Bruce Gavin of Online Reference in Colorado Springs. DOS 5.0 "takes the place of other utilities; it lets you see what's loaded and where."

While users are unanimously pleased to be able to load most of DOS in high memory, many griped that memory optimization isn't automatic, as in packages such as Quarterdeck's *QEMM*. "You can do it manually with 5.0, by trial and error, but unless you're an advanced user and completely understand what you're doing, it's confusing to know what [memory-resident programs] to load first and where," says Eric Rintell, a Lawrence, New York, computer consultant.

Adding Greater Utility

Most users are impressed with a variety of small but helpful gains. These include a shell with task switching; powerful new commands; on-line help; and a full-screen text editor that replaces (but does not eliminate) the notorious EDLIN.



Early adopters say DOS 5.0's revamped shell and other aids like on-line help will simplify usage, especially for novices.

Among the enhancements, DOS 5.0's shell and task swapper receive the most mixed reviews. It's generally accepted that the *Windows*-like shell will make things easier for novice users. However, praise for the way DOS 5.0 lets you switch between applications is not exactly resounding. Michael Sheafe, senior instructional designer at American Express's Strategic Operations in New York, finds this capability very attractive for 8086s or machines not running *Windows*. But "it's a little poky because everything has to be written to disk," says Paul Cassel, an Albuquerque small systems consultant, who maintains that closing one application and opening another is almost as fast.

Cassel gives 5.0's UNDELETE command high marks: "It's beyond simple." Sheafe finds the improved DIR command a nice detail because it lets him know how many bytes are free and how many each subdirectory is using. Gavin finds that DIR's new ability to sort files by size, date, or extension makes it easier to move files from a floppy to the hard drive. Users also say that DOSKEY, which lets you retrieve or record command-line keystrokes, should prove helpful even for novices. On-line help is a big plus, they declare.

The reviewers roundly praise 5.0's ease of installation. "There were no surprises," says Sheafe. He is particularly struck by the UNINSTALL feature, which let him save his old DOS until he was sure he'd have no problems with the new.

Cassel complains, however, that DOS 5.0 ships without a bootable disk. He is concerned that if his clients lose the ability to boot from the hard disk, they will find nothing when they look in the Microsoft package. "Of course people can make their own boot disk after they install it, but people don't do that," Cassel says.

—*Kathleen A. Gow*

STEPHEN MARKS

Consultant Paul Cassel approves of UNDELETE and other DOS 5.0 enhancements but finds the task swapper "a little poky."

Palmtops Give Strong Grip on Information

Users Customize Software for Under-a-Pound PCs

Featherweight palmtop computers are quickly becoming "an integral part of the manager's arsenal," says Eaton's Bob Martin.

As director of finance for a Cambridge, Massachusetts, management consulting firm, Leo Boudreau knows the heartache and backache of schlepping a packed briefcase, a bulky garment bag, and a laptop PC through airports. His worst experience came while running to catch a plane: Security guards forced him to plug in and boot up to prove his laptop wasn't a bomb.

Boudreau's burden became more manageable when he traded the laptop for an 11-ounce Hewlett-Packard 95 LX. He's not exactly doing an O. J. Simpson through airports, but the new palmtop PC does make it considerably easier to run—either a spreadsheet or to catch a plane.

PC (Not Terminal) in Hand

Hand-held computers are not new. But until recently they were primarily data gatherers in the hands of meter readers and grocery clerks.

Today, advances in read-only memory, memory-card storage, and powerful processors have supercharged small PCs so that a wider number of users can compute—not just gather info—sans desk or even lap. The 95 LX, Poqet Portable PC, and Atari Portfolio are full-fledged PCs with DOS, a full complement of desktop utilities, and even applications stored in ROM for instant computing. Prices are all over the map—$795, $1450, and $300 respectively, for these palmtops—seemingly without correlation to features, and you still need to add a $100 to $200 pocket modem. But price doesn't seem to be an issue for professionals on the run who need information at their fingertips.

In Boudreau's case, that means working the numbers on the 95 LX's built-in copy of *1-2-3*. For Bob Martin of Eaton Corporation, in Cleveland, it means being able to quickly check his electronic phone book or appointment calendar. Martin, manager of executive support systems for the 40,000-member firm, is also developing *1-2-3* templates for executives at Eaton to use as they move from meeting to manufacturing site.

"This [palmtop system] will become an integral part of the manager's arsenal," predicts Martin, whose first purchase of a couple dozen 95 LXs could grow to hundreds. Some managers are already using the 95 LX for quick on-site analyses that formerly had to wait for desktop crunching.

This is where Sharp Wizard–type organizers get left behind, users say, because they lack the power for spreadsheet analysis, data base maintenance, and E-mail fetching. The Poqet and Atari Portfolio have XT-class processors, while the 95 LX's NEC chip has about two and a half times that power.

Getting the Message

Poqet is working with Infonet Services, to provide messaging services in some 40 countries for visiting businesspeople. Poqet owners can use local phones to access or send data files and faxes via the Infonet system to their own companies, or to other subscribers to information/mail utilities.

When the Portfolio and the Poqet are employed this way, rather than as laptop replacements, their screen and keyboard shortcomings are no longer important. All palmtops sport QWERTY keyboards, good for little more than one-finger pecking, and low-contrast, nonbacklit liquid-crystal displays. No matter, say users, who put a higher premium on palmtop size, light weight, and long battery life. Palmtops offer 60 to 100 hours of continuous operation on a couple of easily replaceable penlight batteries and fold up to fit in pocket or purse. At 1 pound, the Poqet and Portfolio are a little heavier than the 95 LX.

Thanks to standardized RAM and ROM cards, companies can assemble custom suites of applications for their traveling professionals. Warner Brothers has given Poqet PCs to 20 globe-trotting salespeople. In addition to Poqet's usual software, the palmtops carry a memory card that holds contracts, a 100K data base of film, and a list of royalty rates. —*Mike Hogan*

Selling like hotcakes since its introduction this spring, Hewlett-Packard's $795 95 LX has redefined the palmtop market.

BRUCE ZAKE

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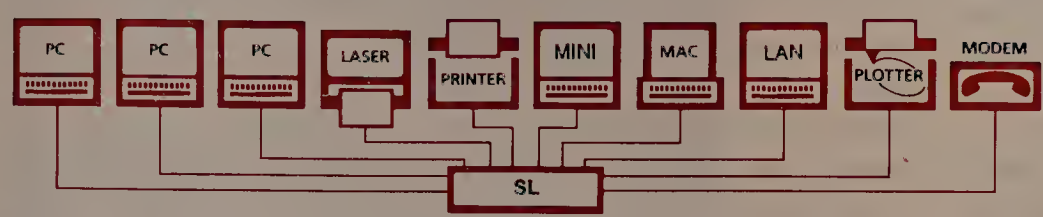

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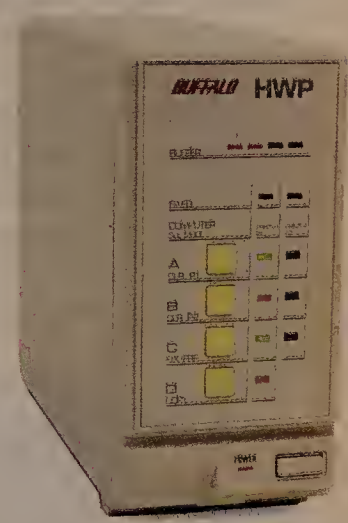

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SLP	10 8 Par., 2 Ser.	Any Combination	256KB - 4MB	Pop-up Menu	**$495** / 256KB **$595** / 1MB
HXM	4 2 Ser., 2 Par.	Any Combination	256KB - 16MB	Pop-up or Buttons	**$295** / 256KB **$395** / 1MB
HXS	4 Serial	Any Combination	256KB - 16MB	Pop-up or Buttons	**$295** / 256KB **$395** / 1MB
HWP	5 Parallel	3/2 4/1	256KB - 16MB	Pop-up or Buttons	**$295** / 256KB **$395** / 1MB
HXP	4 Parallel	2/2 3/1	256KB - 16MB	Pop-up or Buttons	**$245** / 256KB **$345** / 1MB
HCP	2 Parallel	1/1	256KB - 16MB	One Printer	**$225** / 256KB **$325** / 1MB
AS-41	5 Parallel	4/1	None	One Printer	**$195**
AS-31	4 Parallel	3/1	None	One Printer	**$175**

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PC Price Wars Keep Growing Sharper

Many Savvy Customers Turn Away From Dealers

A 486 PC for $3000. Too good to be true? Not any longer. From Compaq to IBM to the littlest clone maker in Taiwan, PC vendors keep slashing prices to give buyers some of the best hardware deals ever.

The floor fell out last spring when Compaq cut prices as much as a third. IBM and the rest of the PC-selling hierarchy soon followed suit. By June, direct-mail vendors on the lowest rungs were cutting a couple of hundred dollars off price tags. (For a detailed analysis of current PC pricing trends, see *PC World Marketplace.*)

So now's the time to buy, right? Maybe. But prices should continue to drop through year-end. Increasingly savvy buyers, recession, competition from new sources, a glut of high-powered machines in the United States, and slower PC sales overseas will make vendors eager to deal. Fall will see additional pressure as volume shipments start on Intel's new 20-MHz 486SX and the 386 clone processors from AMD.

The latest wave is "a function of the market maturing in a number of ways," says Bruce Stephen, analyst with International Data Corporation in Framingham, Massachusetts. "There's a more sophisticated base of customers who've been buying PCs for five years or more. They're no longer willing to pay premium prices for mainstream PC products. As a result, brand loyalty is tenuous."

Buyers Take Direct Action

If brand loyalty is wavering, loyalty to the dealer channel is disappearing. Most traditional resellers are seeing scary profit and little growth margins; Businessland, perhaps the most influential chain until recently, is escaping Chapter 11 only by selling out. The share of PCs sold by dealers will plummet from last year's 62.1 percent to 49.1 percent in 1993, IDC predicts.

"The superstore phenomenon hurt people like Businessland that said computers were a specialty item, because the superstore says it's just a commodity," says Rob Cheng, director of marketing for Gateway 2000. The direct-mail vendor in North Sioux City, South Dakota, expects to post sales of over $500 million this year. Whether computers are a commodity depends on the user's application and expertise, notes Cheng, but buyers are increasingly knowledgeable about their needs.

"They know what they've got in their systems, and they recognize the brand names of components such as hard drives, graphics cards, and motherboards," says Valerie Paxton-Maloney, marketing director at Insight Computers in Tempe, Arizona. "And they realize they can buy a lot cheaper direct."

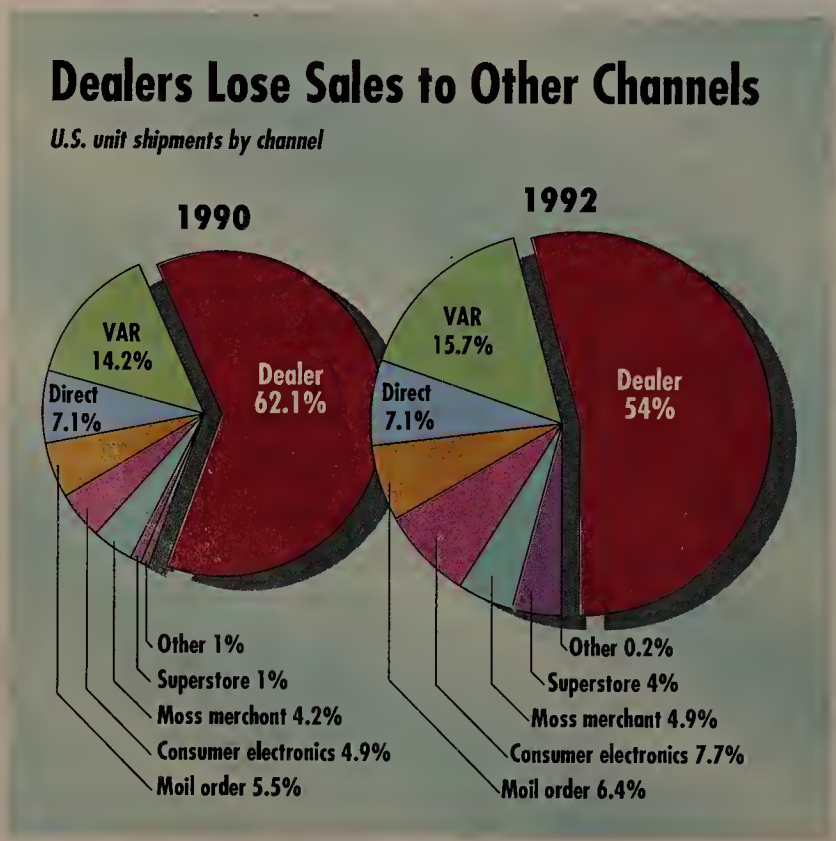
"If I have my way, there won't ever be an IBM in here," says Barry Cook, computer resource analyst in the Colorado Springs office of Mantech Advanced Systems. The office bought four Insight PCs and plans to buy more.

Sandi Graham, network services supervisor for Franklin Federal Bank in Austin, Texas, is another of this new breed of savvy buyer. "We're trying to become self-sufficient," says Graham, whose firm has some 400 PCs installed. "We've decided to replace our video cards, hard drives, and floppy disk drives. We did the last two network upgrades on our own."

The top four criteria Graham considers when PC shopping are quality of components, service, price, and dependability. Austin Computer Systems, an aggressive mail-order firm, met those requirements, and Graham is now replacing IBM PS/2s with Austin PCs.

While customers may worry that lower prices mean poor product support, that's not necessarily true. Says Graham of Austin's service: "They've put every vendor we ever dealt with in the shade." —*Russell Glitman*

Kathleen A. Gow is a freelance writer based in Medford, Massachusetts.



Vendors such as Compaq that sell almost exclusively through traditional dealers are seeing an increasing threat from inexpensive PCs sold through outlets with less overhead. International Data Corporation figures show dealers' share of the market steadily dwindling, direct-sale suppliers like Dell holding their own, and all other channels increasing.

JEFF BERLIN

While PC shipments keep rising, estimates from Dataquest show the market growing less quickly, accentuating pricing pressures. But the market researcher is optimistic that shipments will climb faster in 1992. This year 11.8 million PCs will ship in the United States, 26.3 million worldwide.

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The AST Premium II 486SX/20 and Dell 320LT were the most aggressively priced desktop and portable PCs in the latest survey by International Data Corporation.

Best-Sellers

Leading PCs sold through traditional computer channels

1. *IBM PS/2 Model 55 SX*
2. *IBM PS/2 Model 70 (20 MHz)*
3. *Compaq LTE 386s/30*
4. *Compaq Deskpro 386s*
5. *IBM PS/2 Model 30-286*
6. *NEC PowerMate SX*
7. *IBM PS/2 Model 50z*
8. *Compaq Deskpro 386n*
9. *AST Brava/Premium SX*
10. *Compaq 386/20e*

The PS/2 Model 55 SX still easily led sales through dealers, and the repriced PS/2 Models 30-286 and 50z also sold well, in Store-board/Computer Intelligence's latest survey.

BARGAINS OF THE MONTH

Over the Counter

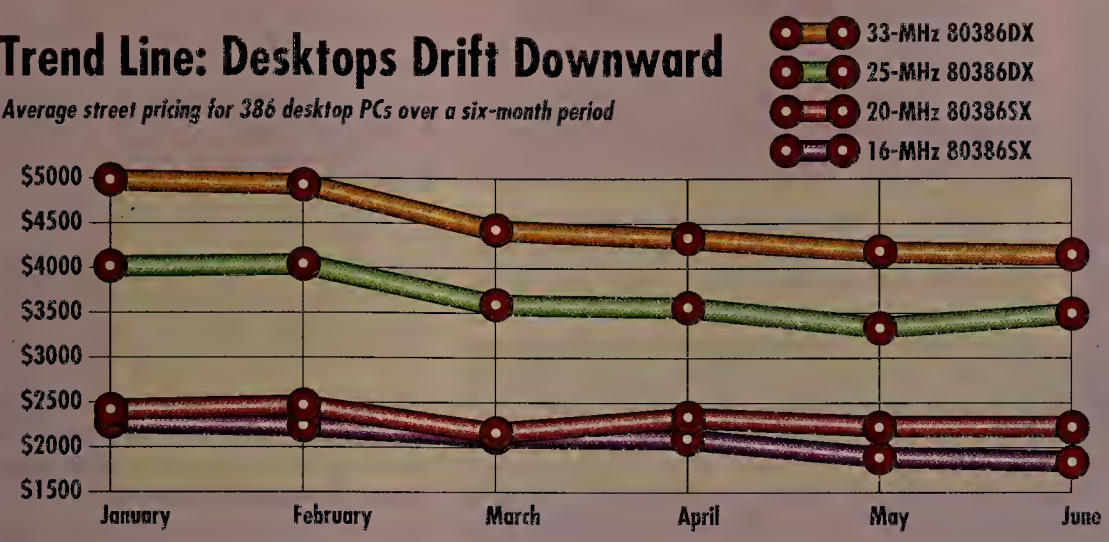
What you pay at retail stores for popular PCs

	Configuration				National					
	Speed (MHz)	RAM (MB)	Hard disk (MB)	Video adapter	List	Average	Low	Boston	Chicago	Dallas/Ft. Worth
80386SX-based desktop PCs										
AST Bravo/386SX	16	2	40	VGA	$2845	$2162	$1585	$2268	$2088	$2276
Compaq Deskpro 386s	16	2	40	VGA	$2399	$1884	$1535	$1945	$1824	$1787
Compaq Deskpro 386s/20	20	2	60	VGA	$2899	$2264	$1855	$2345	$2325	$2198
Dell System 320 LX	20	1	40	VGA	$2100	$2100	$2100	$2100	$2100	$2100
Epson Equity 386SX/20 Plus	16	2	40	VGA	$3449	$2598	$1795	$2653	$2609	$2605
IBM PS/2 Model 55 SX-061	16	2	60	VGA	$2945	$2225	$1849	$2208	$2255	$2283
NEC PowerMate SX/20	20	2	42	none	$2799	$2058	$1449	$2043	$2080	$2036
80386DX-based desktop PCs										
AST Premium 386/25	25	2	110	VGA	$5595	$4183	$2495	$4431	$4031	$4476
Compaq Deskpro 386/33L	33	4	120	VGA	$6199	$4793	$3967	$5098	$4980	$4842
Dell 333P	33	4	100	VGA	$3000	$3000	$3000	$3000	$3000	$3000
Epson Equity 386/25 Plus	25	2	100	VGA	$4749	$3557	$2992	$3667	$3589	$3157
IBM PS/2 Model 70-A21	25	2	120	VGA	$6445	$4886	$4125	$4876	$4834	$4785
Tandon 386/33	33	4	110	VGA	$3079	$3079	$3079	$3079	$3079	$3079
Tandy 4033 LX	33	2	105	VGA	$5898	$5898	$5898	$5898	$5898	$5898
80486SX-based desktop PCs										
ALR BusinessVEISA	20	1	80	none	$3495	$2649	$2029	$2651	$2647	$2534
AST Premium II 486SX/20	20	4	80	VGA	$3695	$2832	$1449	$3004	$2799	$2679
IBM PS/2 Model 90XP-OG5	20	4	80	XGA	$8345	$6422	$5842	$6352	$6321	$6050
80486DX-based desktop PCs										
AST Premium 486/25E	25	4	110	VGA	$8595	$6575	$5157	$6819	$6910	$6876
Compaq Deskpro 486/33L	33	4	120	VGA	$10,099	$7799	$6362	$8051	$8198	$7701
IBM PS/2 Model 95 XP	33	4	320	XGA	$16,445	$12,492	$10,525	$11,587	$12,749	$11,898
NEC PowerMate 486/25E	25	4	140	none	$9899	$7419	$5395	$7226	$7781	$7189
Portables/laptops										
Compaq LTE/286	12	640K	20	CGA-LCD	$2499	$2024	$1714	$2005	$1989	$1937
Compaq LTE 386s/20	20	2	30	VGA-LCD	$4399	$3671	$3000	$3645	$3602	$3450
Dell 320LT	20	2	40	VGA-LCD	$3299	$3299	$3299	$3299	$3299	$3299
Epson Equity LT-386SX	16	2	40	VGA-LCD	$3998	$3039	$2559	$3087	$3171	$3009
IBM PS/2 Model L40 SX	20	2	60	VGA-LCD	$5995	$4556	$3837	$4616	$4462	$4646
NEC Ultralite 286F	12	1	20	CGA-LCD	$2799	$2031	$1600	$1697	$1845	$1879
Tashiba T1200XE	10	1	none	CGA-LCD	$2299	$1816	$1449	$2187	$2093	$1709
Tashiba T2000SX	16	1	40	VGA-LCD	$3749	$2963	$2399	$3195	$3287	$2878
Zeas Notebaok 286	12	1	20	VGA-LCD	$1995	$1995	$1995	$1995	$1995	$1995

Fram an IDC survey of mare than 180 computer dealers in eight metrapolitan areas. Figures based on at least four price quates far each machine. Prices are based on manufacturer's standard canfigurotion withaut manitar. [1]IDC was unable ta callect enaugh price quates for this model in this metrapalitan area due ta limited dealer caverage.

Trend Line: Desktops Drift Downward

Average street pricing for 386 desktop PCs over a six-month period



Pricing in the core of the marketplace—desktop 386 machines—has dropped substantially this year, according to IDC's PC Pricing Report. And the latest models often include more memory and larger hard drives. While prices began to stabilize in late spring, analysts predict another round of significant cuts this fall.

Metropolitan

Los Angeles	Miami/ Ft. Lauderdale	New York	San Francisco Bay Area	Washington, D.C.
$2120	$2424	$1847	$2099	$2182
$1878	$1898	$1947	$1931	$1976
$2345	$2276	$2347	$2489	$2298
$2100	$2100	$2100	$2100	$2100
$2423	$2656	$2518	$2348	$2583
$2231	$2188	$2311	$2137	$2062
$2099	$2020	$2172	$2141	$1816

$3987	$4389	$3536	$4127	$4288
$5053	$4856	$4098	$4775	$5123
$3000	$3000	$3000	$3000	$3000
$3381	$3426	$3918	n/a[1]	$3440
$4756	$4702	$4300	$4436	$4376
$3079	$3079	$3079	$3079	$3079
$5898	$5898	$5898	$5898	$5898

$2717	$2647	$2482	$2491	$2857
$2845	$2891	$2392	$2722	$3017
$6384	$6509	$6653	$6702	$6509

$6296	$6860	$6338	$6339	$6599
$7765	$7634	$8038	$8045	$8397
$11,436	$12,181	$12,138	$12,320	$13,145
$7424	$7114	$7870	$7567	$6718

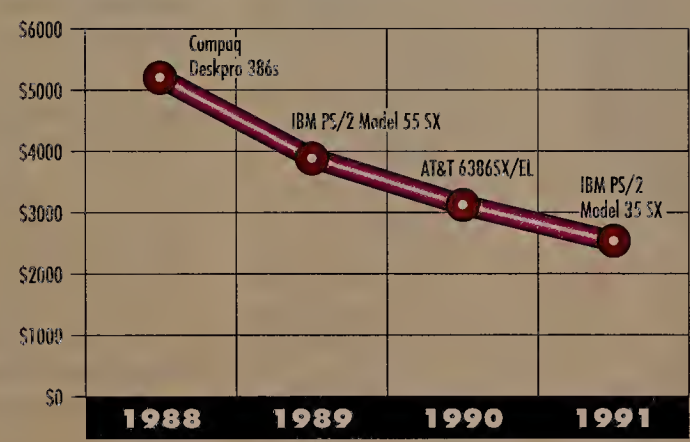
$2035	$2020	$2056	$2003	$2071
$3545	$3487	$3601	$3614	$3577
$3299	$3299	$3299	$3299	$3299
$2859	$3079	$3174	$2849	$3023
$4353	$4696	$4653	$4594	$4247
$2208	$2251	$2221	$2109	$1699
$1912	$1938	$1767	$1891	$1672
$3655	$3685	$2869	$3084	$3752
$1995	$1995	$1995	$1995	$1995

PC Futures: Reaching a Lower Plateau

AST's Premium II 486SX/20 repeats as the desktop Bargain of the Month,[2] while Dell's 320LT led the pack as portable Bargain of the Month. IBM's PS/2 Model 55 SX still sold more than twice as many units as any other PC, but its dominance will diminish now that IBM is offering three additional 386SX models (see "IBM's Counter-Clones" in this issue). Pricing pressures remain strong throughout the industry (see "PC Price Wars Keep Growing Sharper" in this issue). Vendors cleared inventory for the slow summer season by offering fire-sale pricing on machines that are being phased out, such as the PS/2 Model 50z. Volume shipments of new chips (particularly Intel's 486SX) should lean further on prices this fall. However, year-to-year improvements in price/performance are sticking close to the industry's historic trends, as introductory costs for SX-based PCs demonstrate.

SX-Based Systems Make Steady Gains in Price/Performance

List prices for selected entry-level 386SX PCs at midyear debuts



A traditional rule of thumb has PCs gaining about 20 percent in price/performance annually. Popular 386SX systems generally stick close to that line, sometimes doing even better when more powerful base configurations are taken into account .

[2] Bargains of the Month are determined by adjusting prices on PCs of a given class for standard memory and storage, then finding which PC compares best.

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A picture's worth a thousand words. Add power and impact to anything you print in house with NEC's *Photo Gallery*, a collection of B&W photography from UNIPHOTO.

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The most extensive collection of typefaces available anywhere! CD-ROM Technology allows you to access 1000 individual typefaces from a single CD-ROM (rather than gobbling up precious space on your hard disk) and instantly access them for use in letters, reports, newsletters, brochures -- anything you publish. These high quality typographic libraries are compatible with virtually all desktop publishing systems and not imitations — they are licensed by Adobe Systems Incorporated from famous type foundries such as ITC, Linotype AG, Bigelow and Holmes, Letraset and others.

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Internal reader available — please call.

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Easily Create Magnificent 3-D Charts!

3-D CHARTS TO-GO Makes Numbers Sing in 3 Dimensions.

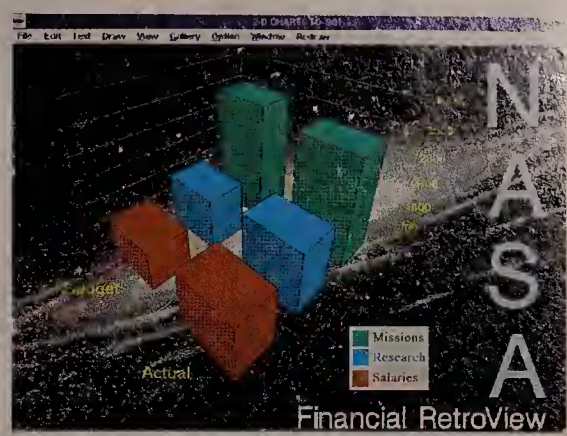
Why settle for two-dimensional charts when you can create explosive 3-D charts in just seconds with 3-D CHARTS TO-GO? This easy-to-use system will produce 3-D Pie, Bar, Area, Text and Line charts instantly, using your existing Excel numbers through its advanced clipboard. The innovative "split-screen" feature allows you to see both the data and the chart together for fast editing — you don't have to flip-flop between two applications when you create charts. And 3-D CHARTS TO-GO will give you three different chart views: Perspective, Isometric and Oblique.

Control Size, Angle, Color, Type and Reproduction Quality.

3-D CHARTS TO-GO allows you to interactively control the size of your charts — so you see the adjustments as you make them! Sizing is as easy as clicking to get the exact size you need. Click again and adjust the viewing distance, click once more and change the rotation angle to add unique perspective to your chart. This rotation-angle control allows enormous flexibility in presenting your charts so that the data is clearly displayed. Quickly select from 17 different chart drawing patterns and 8 foreground and 8 background colors. Want to get crazy? Click to create a host of available special effects on the background and shadows to enhance the three-dimensional effect.

There's more, like the ability to select your choice of chart quality: Draft, Fine Black and White and Fine Color. And 3-D CHARTS TO-GO gives you creative freedom when adding type to your charts. Your chart's title, subtitle, descriptive lines, labels, legend and footnotes can all be individually sized, colored and employ different fonts.

What makes 3-D CHARTS TO-GO even more impressive (and useful) is its ability to use data from Excel (and many other Windows-based applications). You'll quickly export numbers to 3-D CHARTS TO-GO without exiting Excel. You can easily merge up to 10 individual charts, print them together and perform fast, accurate data comparison. If you're a PageMaker user, you can enhance documents containing financial information and grids following the same simple steps. 3-D CHARTS TO-GO supports .WMF, .PCX and .BMP file formats.



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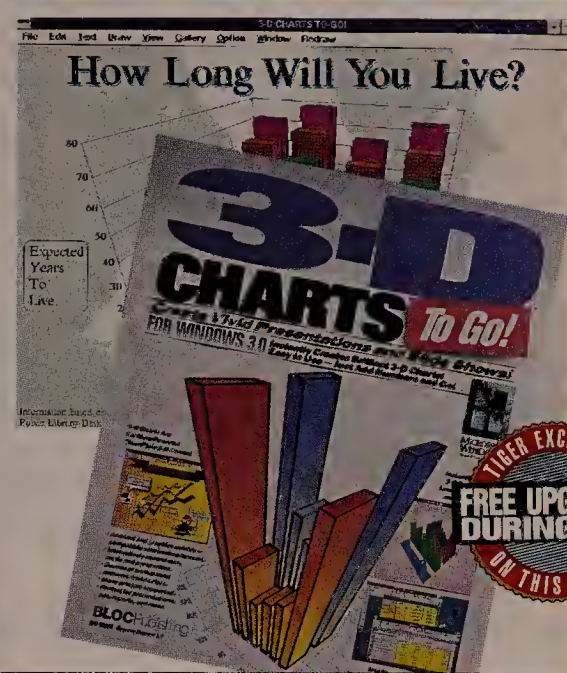

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YQ1300 3-D CHARTS TO-GO 5¼" & 3½" $99.95
Requires Windows 3.0 and 640K.

JUST RELEASED — AMI PRO 2.0!

The Number-One Rated Windows Word Processor. Easier, Faster, More Creative.

Ami Pro has created a world of possibilities for the printed page. It is a pure Windows product, not a "ported" DOS counterpart. It features the visual power and easy-to-use nature of Windows 3.0 to produce top-notch results. Indeed, it established a new standard in word processing for the graphical user interface. Now, version 2.0 breaks new ground with a rich visual environment along with an amazing array of easy-to-use tools at your fingertips. You'll write and format sophisticated documents you may have never attempted before because Ami Pro 2.0 is designed to work like you do, associating pictures and symbols—with concepts. Your ideas take shape faster and expressing them becomes easier. That's the key: Ami Pro 2.0 is extremely easy to use. So easy to use in fact, that you can create crisp, professional-looking letters, reports, proposals and presentations the very first time you use it—even if you've never used a word processor before!

An Ideal Writing Environment. Fast, Smart — and Visual.

Ami Pro 2.0 features fast outlining, easy revision marking, mathematical equations and even freehand drawing. You'll put together charts and tables with simple point-and-shoot action. You'll see your work with true WYSIWYG display. You'll enjoy the built-in portfolio of style sheets and graphics-manipulation tools. Simply choose from pull-down menus to generate a table of contents, flow text around graphics, change fonts, colors and more. You'll select typefaces and move elements on the page easier than you ever thought possible. Ami Pro 2.0 gives you the best spell checker in the business, a thesaurus with 1.4 million selections, a full macro language, an interactive ruler, status bar, color palette and much more. More than Word For Windows. More than WordPerfect.

Power Under the Hood!

Although Ami Pro 2.0 is a breeze to use (and use to its fullest), it posesses enormous power under its sleek interface. You'll seamlessly import and export files from WordPerfect, Microsoft Word, MultiMate, DCA, DisplayWrite, WordStar and others. Ami Pro 2.0 contains over 120 one-click SmartIcons (which match those found in Lotus 1-2-3 for Windows) that make moving through Ami Pro 2.0 fun, and you can customize and arrange them any way you like.

Open and edit multiple documents at one time, see them in four editable view levels — all WYSIWYG and instantly "hot-link" to other Windows applications, including Lotus 1-2-3, with 2-way Dynamic Data Exchange (DDE).

Power Fields.

You can actually create documents automatically using this innovative technological feat. Power Fields are embedded commands that, typed directly into a document, enable it to perform a task automatically. For example, a business letter can request the input of a name, look up the address from another file, automatically place the name and address on the page in a pre-defined format and include various paragraphs or passages depending on the data provided. A power field could also be used to check the state or zip code in the address and determine whether a local or toll-free phone number should be included in the body of the letter.

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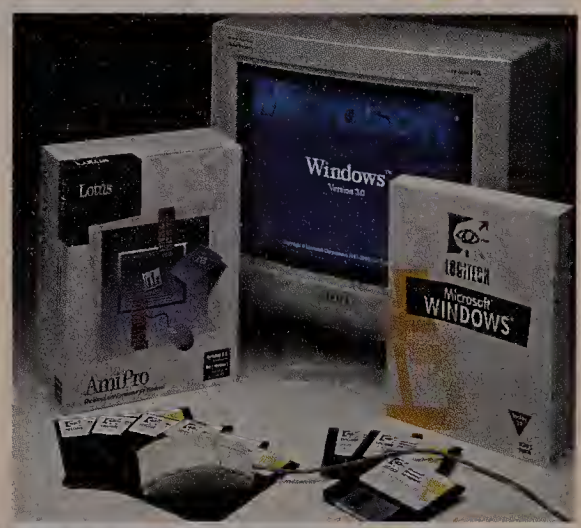

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Lotus

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YQ5095 **Tiger Pack:** Ami Pro *Competitive Upgrade*, Logitech Mouse and Microsoft Windows 3.0; 5¼" & 3½" $159.95
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...For What DOS 5.0 Still Can't Do!

- *DOS 5.0 doesn't allow simple, automatic loading of TSR's, device drivers and network software out of conventional memory.* **386MAX does.**
- *DOS 5.0 won't let you use the same chunk of existing memory for either Expanded memory or Extended XMS memory for Windows.* **386MAX does.**
- *In Windows, you can't simultaneously run the same DOS program or TSR safely in multiple windows.* **You can with 386MAX**

It's Fully Automatic!

Congratulations! You own one of the hottest computers around. But do you use it the way you should? Do you take advantage of its incredible capabilities? Are you confused by all the types of memory, not knowing what program needs what kind of memory or how to provide it? Then 386MAX is your solution. 386MAX takes charge of your computer's memory so you get right to your favorite application.

Speed Is the Key.

386MAX is the ultimate memory manager for today's 386 and 486 hi-tech computers. And best of all, hi-tech doesn't mean highly complicated. 386MAX automatically analyzes and configures your system for maximum performance and efficiency — from making utmost use of your extended memory — to providing Expanded Memory and/or XMS memory to programs that need it — to loading your pop-up utilities and network drivers above 640k. And it's 30% faster than previous versions!

Windows Users...

386MAX is the perfect partner for Windows 3.0. Your Windows applications get all the memory your system has to offer — *plus* any programs you run out of Windows (straight from DOS) get the Expanded Memory they need! You get the best of both worlds!

If you run pop-up utilities, you can now run them reliably in Windows — thanks to a special feature of 386MAX that allows many TSRs to appear more than once in multiple windows!

Effortless Installation...

"Qualitas has made the installation of the program childishly simple, with sensational results."

Jim Seymour, PC Week

If you've tried other memory managers, you know the nightmare of installing one. Figuring out how much memory is used by hot-keyed Terminate and Stay Resident (TSR) programs when they actually run, how much memory they need to just load, where to relocate them in other parts of unused memory above 640k can make one pity the Minotaur trapped in his maze. 386MAX puts the nightmares to rest with its fully automatic installation! All you do is type INSTALL and follow the simple screens as they do all the work.

BlueMAX for the PS/2.

"For PS/2 systems... BlueMAX is the overwhelming choice because it can produce much more usable high DOS memory." *Ted Mirecki, PC Week*

The *only* memory manager designed specifically for 386 PS/2's — BlueMAX's proprietary technology recovers 80kb more memory than any other memory manager. Run your IBM Blue to the MAX.

As Steve Gibson of Gibson Research Corporation (makers of SpinRite II) says: "I wouldn't and couldn't consider using a 386 system without 386MAX 5.0."

386MAX	
YQ3080-5 386MAX 5¼"	$109.95
YQ3080-3 386MAX 3½"	$109.95
YQ3085 BlueMAX PS/2, 3½"	$139.95

System Requirements: Any 386 or 486 based computer, minimum 256K extended memory, PC/MS DOS 3.0 or later. Supports LIM 4.0 EMS, XMS 3.0, VCPI and Virtual DMA Services 1.0.

SAVE $20.00!

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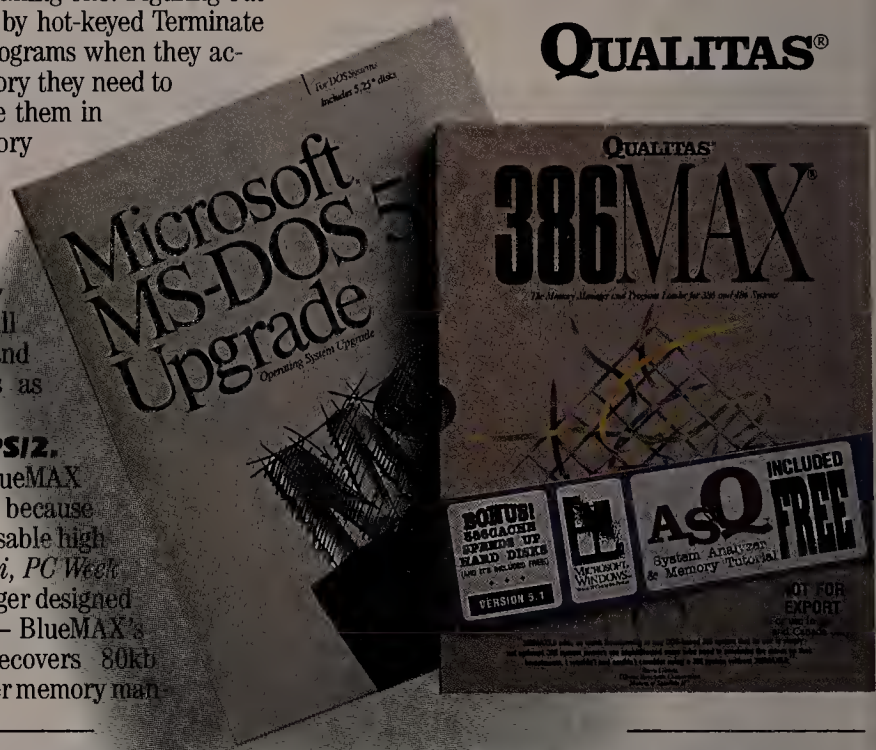

Turn Your PC into a Fax Machine!

Send, Receive and Re-route Faxes — Even Remotely! Full Windows Support!

Your PC is the perfect fax machine: it connects to a modem, it has powerful printing capabilities and contains plenty of storage space. It allows you to use software that automatically transmits faxes at a certain time, or even to send faxes from a remote computer, like your client's office (fax yourself the report you forgot to bring!). Your PC's print drivers allow you to send crisp, clean facsimile documents right from your desktop or laptop PC. You could preview the document, change fonts, add special effects, transmit at 9600 bps and more. Of course, using your PC would make it much easier to manage and archive your faxed communications. And, using your laser or dot-matrix printer, you can receive faxes ON PLAIN PAPER. All you need is the compact, affordable little board known as Fax96.

Tiger presents the price-busting fax board that has swept the industry, and captured *PC MAGAZINE's* "Editor's Choice" with its flawless reliability record. And Fax96 is fully Group 3 compatible. No other fax board can match Fax96's incredible 99.91% error-free transmission rating. In speed tests, using identical documents, Fax96 delivered a finished facsimile over fourteen seconds ahead of the nearest finisher. Fax96 is fast, because it doesn't have to scan documents before transmitting, so your faxes cost significantly less. And "scanless" document imaging eliminates dirt and transmission "noise" that translate to dots, lines and patterns on the finished fax.

Send, receive, print and manage your faxes – quickly and easily with the award-winning Fax96.

FREE! Faxography.

With DOS applications you get completely formatted graphics and 648 EPSON® printer style fonts. (Don't be fooled here. Other boards emulate 9-pin EPSON. We do 24-pin emulation for better quality images.)

Faxography with Windows® applications is stunning. All of the Adobe, Bitstream and other fonts plus graphics are supported cia the Windows EPSON LQ printer driver. Windows application faxes are beautiful and impressive.

Fax96 features: Full 9600 BPS Group III compatibility. • Background Receive operation. • Automatic Transmittal Sheet generation. • Automatic Redial. • Automatic Log of sent and received messages. • Compatible with laser and dot-matrix printers. • Shares your existing phone line. • Remote control for sending faxes.

New — "1-Liner."

Don't install another phone line for your fax. Save money with advanced "1-Liner" faxboard. 1-Liner shares your existing phone line, meaning it will automatically recognize and answer another fax machine, or pass a regular voice call to your telephone answering machine.

Powerful Modem Software.

Frecom is proud to license and include Comit™ modem software from Tradewind Software® We tested all of the software available for including and found Comit to be the tightest, fastest, easiest to use and the only one with MNP 2, 4, 5 and 7 built-in — no extra MNP hardware.

FRECOM

Fax96	
YQ6240 Fax96 board w/software	$149.00
YQ6270 Fax96 board w/modem software	$189.00
YQ6250 1-Liner board w/software	$219.00

PC, MS-DOS 2.1 or higher, 512 KB RAM, hard disk. Shipping NOT included.

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After I Bombed with dBASE, I Almost Gave Up Automating Our Invoices...

Simpler Than dBASE and Paradox — More Powerful Than Q&A!

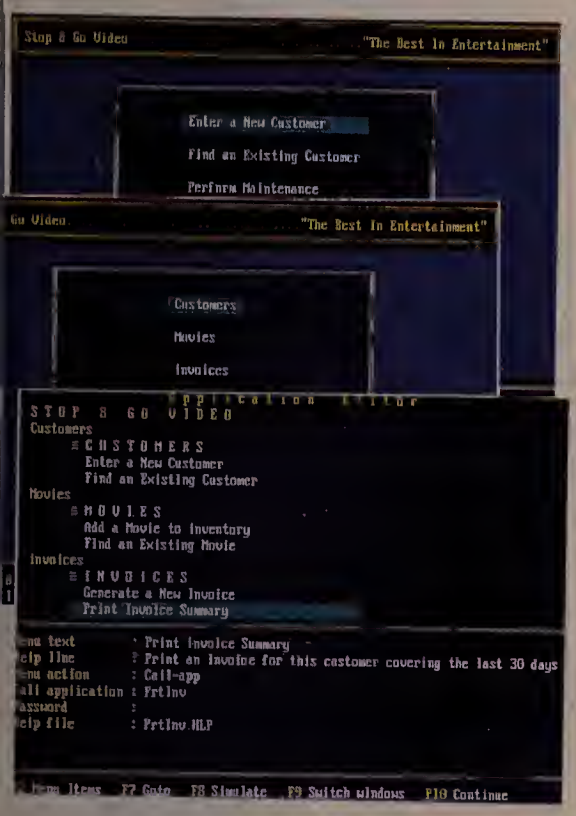
At our Monday morning staff meeting, I announced I was going to automate our invoicing system later that afternoon. Skepticism ran high. "Paul, you promised me an application like that two years ago," said Marge. "You couldn't do it and neither could that dBASE programmer you hired. It'll never happen."

On the other side of the room, Tim, a new employee whispered to Richard, "I didn't know the boss was a programmer too." "He's not," said Richard. "Couldn't write code to save his life. But he keeps trying because he thinks it's vital to the business."

I had already tried three times before to program a database: first with dBASE (much too complicated). Then I tried Q&A (not powerful enough). Then I bought Paradox (just like dBASE). All were either too complicated or not powerful enough.

This time I was confident. Why? Because I just bought Alpha FOUR, the powerful database for non-programmers like me. I spent 45 minutes over the weekend with Alpha FOUR's audio cassette tour. So I knew how easy application designs with Alpha FOUR would be, even the first time. I knew within hours, I'd be able to build a fully relational customer tracking and billing system, complete with custom menus, beautiful screens, extensive help messages and automatic error-correction for trouble-free data entry. And that's exactly what I did. You should have seen Marge's face when the first, perfectly formatted invoice came off the printer!

I Developed My Application in Minutes.



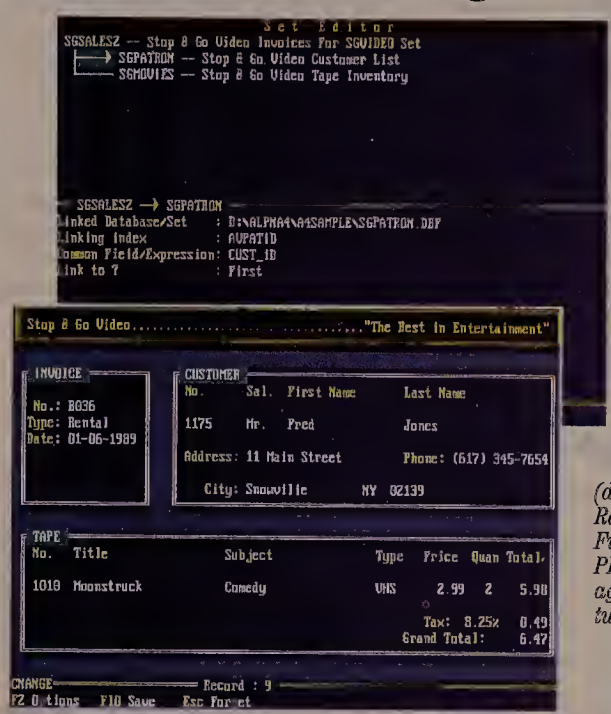
First, I needed a system of menus and sub-menus. Was I ever surprised to see how easy that was! With Alpha FOUR's "Application Editor" I wrote an outline of my menus and sub-menus. (Look at the screen.) Alpha FOUR automatically created my multi-level menus right from there. Changing my menus was just as easy. I inserted and moved a few around until I got it just right — nice and simple for my new employees.

I Made My Data Entry Bulletproof.

I've got a high employee turnover rate, so I needed something simple that a new hire could run right from the screen. I wanted my system absolutely safe and secure, so no "accidents" or mistakes could damage the data I've worked so hard to gather. That's when I really started to appreciate the well-thought-out way Alpha FOUR works. The "validation" capabilities ensure data gets entered correctly. I set it up so Social Security numbers must be 9 digits long (otherwise a custom error message is displayed).

When I enter a new customer, Alpha FOUR automatically skips over unneeded fields (determined by my validation rules). And best of all — I use "lookup" fields whenever I can. So when I get to the "Customer Type" field, a window pops up with my choices. All I do is highlight and hit ENTER. No chance of an error!

I'll Never Enter Data Twice Again.



I always ran out of power with other simple-to-use databases; they weren't relational, meaning I couldn't link up separate files that share a common field. But with Alpha FOUR I easily created different databases for customers, invoices and inventory, and linked them all together just by drawing the links between the databases on the screen. (Look at my screen.) Now, we never have to enter the same information twice. I can display and edit information from up to 10 databases on one screen all at the same time. Before, when I changed a customer's address, I had to do it in 3 different places. Never again. And my database files are so much smaller now — because the actual data is only stored in one database.

Forms and Reports Look Great!

Alpha FOUR's Report Writer was even more impressive. I "painted" reports and invoices on-screen. They looked exactly like I wanted them to — much better than our old paper forms. This "What You See Is What You Get" approach to report writing gives me the flexibility I need to create meaningful and detailed reports that really get my point across.

SPECIAL PRICING
$549 VALUE!
JUST $99.00!

Totally dBASE Compatible.

I was delighted to hear Alpha FOUR is totally compatible with dBASE .dbf files. Our mailing list went right into the new application without even having to be converted! And when my Alpha FOUR application grows, it'll import those Lotus 1-2-3 files used over in accounting. In fact, Alpha FOUR can import and export Lotus 1-2-3, Symphony, VisiCalc, PFS, MultiMate, WordPerfect and other packages.

And Now I Get Fancy...

First I breezed through the tutorial just to get a fully operational application, but now I have the time to dress it up and make it fancy. First I'll change my menus to 3D boxes for the menu selections, and change some of the colors here and there. Alpha FOUR makes it all so easy. Then I'll customize some of the data entry screens so they look just like the paper forms the employees are used to working with. I know — I'll call up Alpha's free Bulletin Board Service and get some tips from other Alpha FOUR users.

In the future, I'll use Alpha FOUR's "Documentation" program to print out a full report of my database design, complete with all the details. That way, someone else can pick up where I left off and further expand the system.

SAVE $450 With This Ad!

NOW JUST $99!

If you already have any database software, integrated package* or mail list manager, or if you are currently using your spreadsheet to manage data, you can upgrade to Alpha Four for just $99.

**Qualifying packages include programming databases (dBASE II, III and IV, Paradox, Clipper, Foxbase Fox Pro, Revelation, etc.), flat-file databases (Q&A, PFS:Professional File, Rapid File, etc.), integrated packages (Microsoft Works, PFS:First Choice, Lotus Works, etc.), and mailing list managers (FastPak Mail, etc.) or spreadsheets with databases (Lotus 1-2-3, Quattro Pro). Retail price $549.*

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Alpha FOUR Version 1.1

YQ3455-5 Alpha FOUR V1.1 5¼" $99.00
YQ3455-3 Alpha FOUR V1.1 3½" $99.00

Regular Tiger price $319. Hard disk, 360kb, MS-DOS 2.0 or above, 512kb RAM. Includes over 40,000 Zip Codes with corresponding cities and states — completely cross-referenced for easy fill-in.

Risk-free, 60-day money-back guarantee. Limit one per customer. Offer good through October 31, 1991. ***Sorry shipping is not included on this special offer.***

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Simply the Best Disk Optimizer!

The Ultimate Disk Packer and De-Fragmenter For ANY Size Disk!

There's nothing more aggravating than a sluggish hard disk. It doesn't go away — it gets worse every time you use your computer! The culprit: DOS. It stores files in little pieces all over your hard disk, instead of in one piece. This "fragmentation" can significantly impair your system's performance, and shorten the life of the disk itself. There is an easy, safe and affordable solution — FastTrax.

FastTrax 4.0 is the industry-acclaimed disk optimizer that keeps your hard disk running like new. It works in 3 ways to keep your hard disk clean, organized and fragment-free.

1. **Solves Fragmentation.** FastTrax defragments and consolidates scattered files and directories on any hard disk or floppy. And it will work beautifully with disks with DOS partitions larger than 512K. There are no limits to the number of files, directories, directory levels or clusters. The unique "Optimize Fragmented Files Only" feature lets you tune-up your disk in seconds and supplies visual reports on fragmented disk areas and other vital file statistics before you optimize.
2. **Efficient File Placement.** DOS is lazy. It doesn't care where it places the pieces of your files that it so carelessly fragments. FastTrax takes care of that by placing your files within disk cylinder boundries. This adds more speed to your disk than you've ever seen (even when it was new) by reducing track-to-track seeks when accessing these files.
3. **Reduces Hard Disk Head Movement.** FastTrax and its companion product, MakeTrax (included FREE), give you the flexibility to place frequently used files close to your File Allocation Table (FAT), reducing the amount of movement of your hard disk's read/write head. By placing files in strategic positions, you'll increase speed and use disk space efficiently. And FastTrax actually prevents data loss in the event an optimization is disrupted in progress.

PC WORLD BEST BUY

"Being able to customize optimizations to fit your applications is what makes the difference... FastTrax wins hands down. It's the most fully featured optimizer around."
–PC World

PC MAGAZINE EDITOR'S CHOICE

"With more power and more options than the competition, and with all available safety precautions, FastTrax is the closest thing you can find to the ultimate disk packer and defragmenter."
–PC Magazine

1989 BYTE AWARD OF DISTINCTION

"But after trying them all, we've found FastTrax to be fast, rock-solid, easy to use, and highly configurable — your disk gets organized the way you want it in minutes."
–Byte Magazine

Minimum RAM requirements:
- 256 KB for floppy disk systems
- 512 KB for most hard disk systems

Maximum RAM requirements:
- 800 KB expanded memory (LIM version 3.2 or higher) may be needed to optimize hard disk partitions larger than 85 MB.
- Supports any drive: ESDI, SCSI, IDE removeable hard drives and drives with more than 1024 cylinders.

FastTrax Features:
- Optimize any disk supported by DOS, including those with DOS partitions larger than 512 MB.
- Fast and safe optimizing.
- Extra-fast "optimize fragmented files only" option lets you "tune-up" your disk in seconds.
- Visual reporting shows fragmented disk areas and other file statistics before you optimize.
- No limitations on the number of files, directories, directory levels, or disk clusters.
- Batch file operation.
- Works on hard disks or floppies.
- Helps prolong the life of your hard disk.
- Compatible with existing copy protection schemes; FastTrax itself is not copy protected.

FastTrax

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If you use WordPerfect, LetterPerfect, Microsoft Word, or Works — you absolutely must have Freedom of Font Choice. Whether you print on a dot-matrix, inkjet or laser printer, Powerpak delivers the finest-quality fonts your money can buy.

Why Scalable?

There are two different types of font software: scalable fonts and bit-mapped fonts. Powerpak uses the newer, advanced scalable-font technology. A scalable font is basically mathematical formulas that describe the shape of the font, with no reference to the size. When you need that font, you pick a size, and the needed letters are created instantly from the mathematical formulas. The letters are created "on the fly" — as you need them. Scalable fonts use virtually no hard disk space — only 50K for an entire typeface family, which includes every size you'll ever want.

Bit-mapped fonts on the other hand, gobble megabytes of hard disk space right from the start. Bit-mapped means each "bit", or visible dot that makes up a letter, is "mapped" to a specific location. You need a separate file for each bit-mapped font — that means one file for each font size!

I used to use bit-mapped fonts (before the new scalable fonts came out). I had only 7 different typefaces. Each typeface had five sizes: 12, 14, 18, 24 and 36 point. My limited selection of fonts took up 10 megabytes of hard disk space!

Now I use Powerpak. I have over 114 different typefaces to choose from. In any size I want, from 6 to 1,000 points (Word and Works limits point size to 127). With this seemingly unlimited selection of font choices, I actually use 25% less disk space than before. If I wanted this selection with my bit-mapped fonts, I'd have to buy a 200Mb hard disk!

Quality Fonts

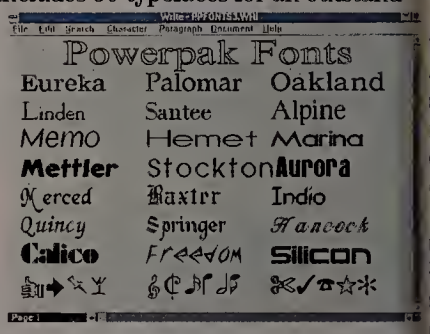
Not all fonts are created equal. There are cheapies out there that print jagged letters and have strange character-spacing. That's why you want to stay with the choice of the pros. PC World recently declared Publisher's Powerpak the "Best Buy" of font software, and gave Powerpak's printer and screen fonts the highest quality rating — Excellent.

- Picking point sizes has never been easier, 6 point to 1000 point
- Easy to install; no new commands to learn

PC WORLD BEST BUY

Add-on Font Packs

Powerpak includes 30 typefaces for an outstanding font-value. (Other font-makers charge $100 to $200 per typeface!) But that's just the beginning. There's an entire library of over 800 typefaces available for you to choose from. Nine foreign languages from Greek to Hebrew to Korean. Atech Font Packs: 117 different volumes — each filled with beautiful assortments of typefaces — and only $29.95 per package.



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The Marstek Family Of Mice.

The Marstek Mice are designed for higher performance. They're 100% Microsoft compatible and impeccably accurate — but they come with a surprisingly modest price tag. We tested the Marstek Mice (E22 and P93 models) for accuracy and speed against other leading nameplates, and it equalled or outperformed the Microsoft Mouse, Logitech's Series 9, and several others. The secret is in the outer shell design and durable construction. You'll notice a silkier movement and an increased feeling of control the very first time you use it. The Marstek E22 and P93 also feature buttons with firm, clean clicks. A far cry from the "mushy" buttons you find on other mice, great for fast, rapid-fire computing.

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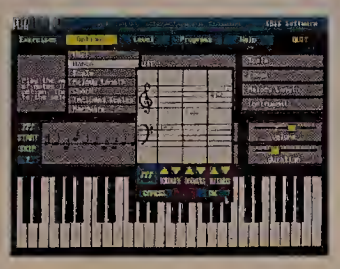

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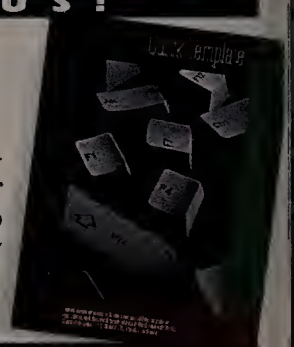

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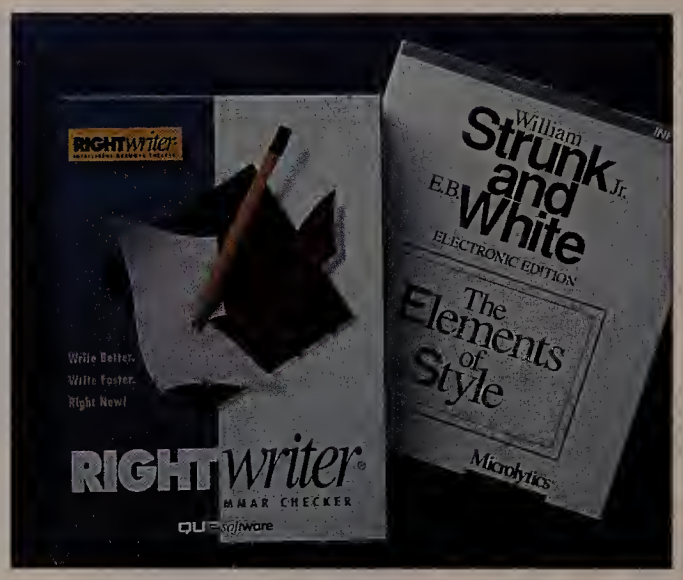

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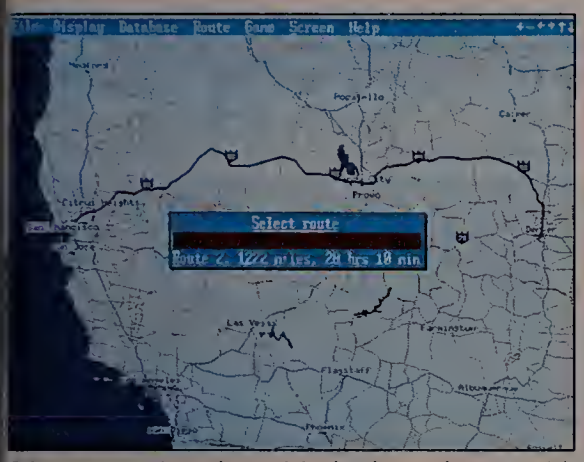

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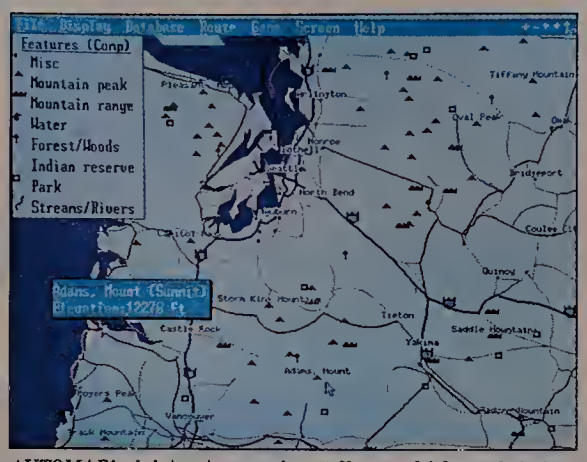

AUTOMAP's driving instructions tell you which roads to travel, how far to go, and approximate traveling time.

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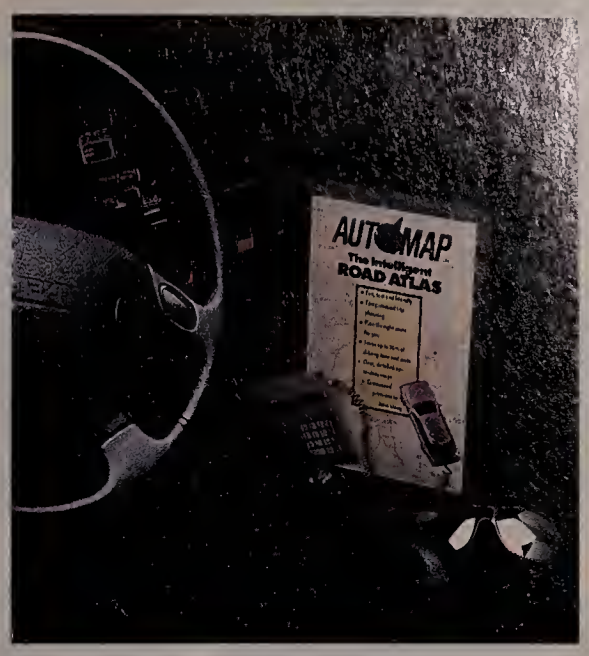

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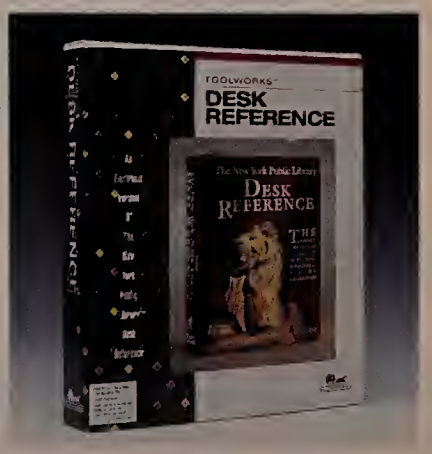

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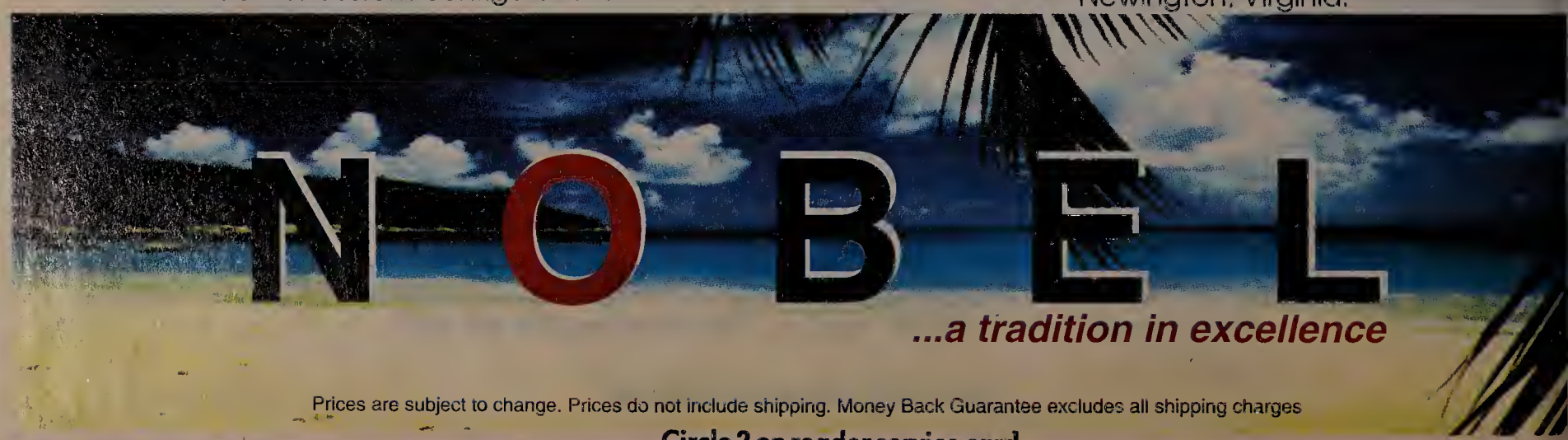

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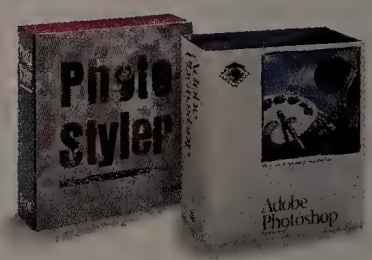

Both ScanMaker models include either PhotoStyler or Adobe Photoshop, absolutely free.

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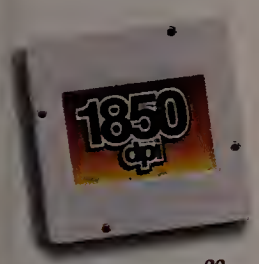

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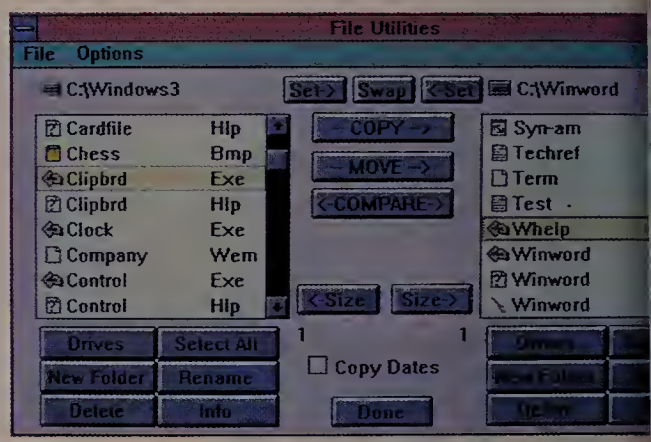

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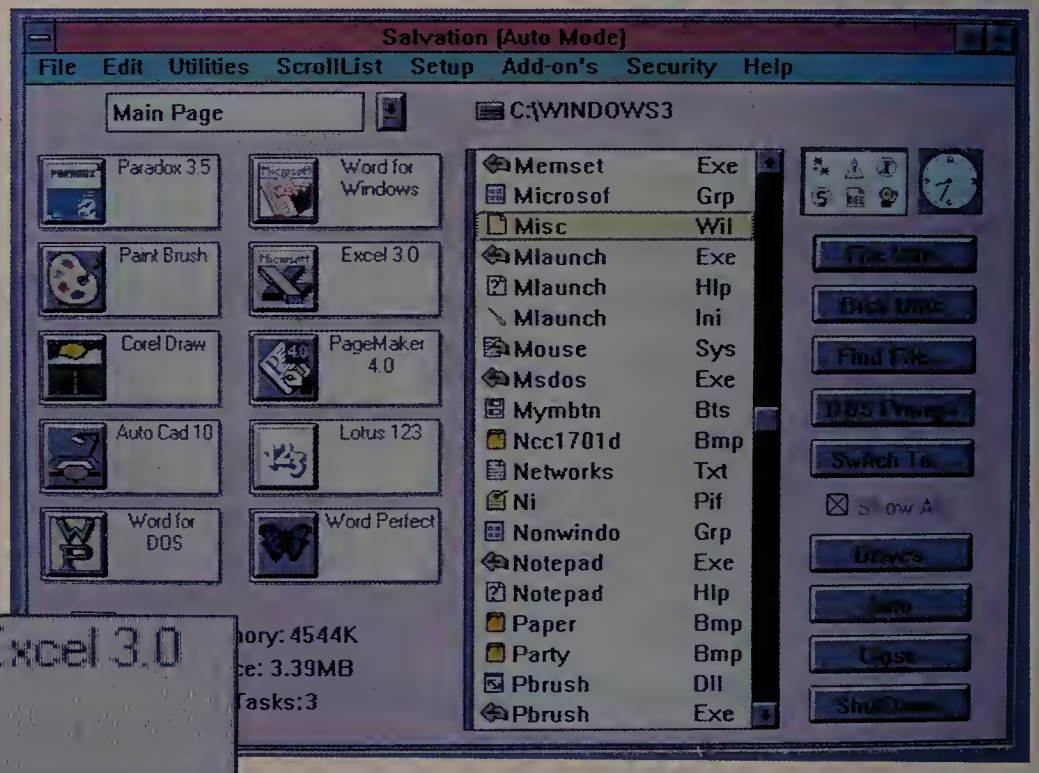

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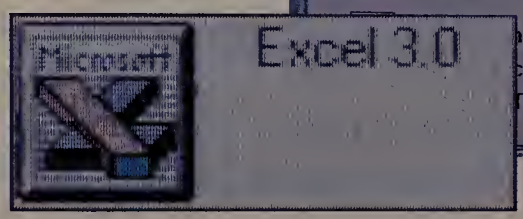

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PREVIEW

PC WORLD OFFERS FIRST IMPRESSIONS OF PRERELEASE HARDWARE AND SOFTWARE

IBM's Counter-Clones

Three bargain 20-MHz 386SX models—two with old-fashioned AT slots—spearhead a counterattack on creeping clonism.

PS/2 Models 57, 40, and 35, with base prices proudly displayed. The 40 and 35 have standard AT slots; the 57, a Micro Channel unit, comes with a 2.88MB floppy drive.

ROBERT CARDIN

Alan Kaplan

COVER STORY

Pick up the business section these days and you're apt to read that IBM has lost its luster. A growing number of PC purchasers are breezing past the Big Blue emblem and opting for speedier, cheaper clones with more room for memory, boards, and drives. Until recently, IBM seemed unable to respond to the challenge.

Now the giant is fighting back with three new PS/2s: Models 35, 40, and 57. IBM's first 20-MHz 386SX desktops, these boxes offer more memory capacity, lower prices, and—in Models 40 and 57—more room for boards and drives than any other IBM desktop system.

Surprisingly, two of the units come with AT slots instead of the usual Micro Channel slots, an acknowledgment that not everyone likes the smaller selection and premium prices of Micro Channel expansion boards. IBM also sets a new standard with these systems by introducing a 2.88MB 3½-inch disk drive.

Aside from the floppy drive, you'll discover no new technology of note in any of these systems. And as PC World Test Center results reveal, IBM's first 20-MHz SX desktops perform much like most IBM units—below average in their class. Clearly these machines are designed to appeal to people who are already enamored of IBM's vaunted service, reliability, and stability as a company but who need a better price to convince them to pony up for the hardware.

Hardball on the Desktop

The most aggressively priced of the new PS/2s, the Model 35 competes against low-priced generic boxes. It starts at less than $2000 and comes in two basic flavors: a medialess LS version with a Token-Ring (and a promised ethernet) board that occupies one of three horizontal full-sized AT slots; and a stand-alone version with 3½-inch floppy drive and choice of 40MB or 80MB 17ms hard drive.

The Model 35 occupies a little less desk space than the Model 30, and has three expansion slots and room for only two drives. The box is a hefty 23.6 pounds including hard and floppy drives, with more than a third of the weight

SNAPSHOT

IBM PS/2 Models 35, 40, 57

IBM's first 20-MHz 386SX desktops offer lower prices and memory, boards, and drives.

KEY FEATURES

- **2.88MB floppy drive available (standard on Model 57)**
- **20-MHz 386SX performance**
- **Room for 16MB RAM on motherboard**
- **Standard AT slots in Models 35 and 40**

AVAILABILITY

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Model 35 $1995–$2695
Model 40 $2395–$3195
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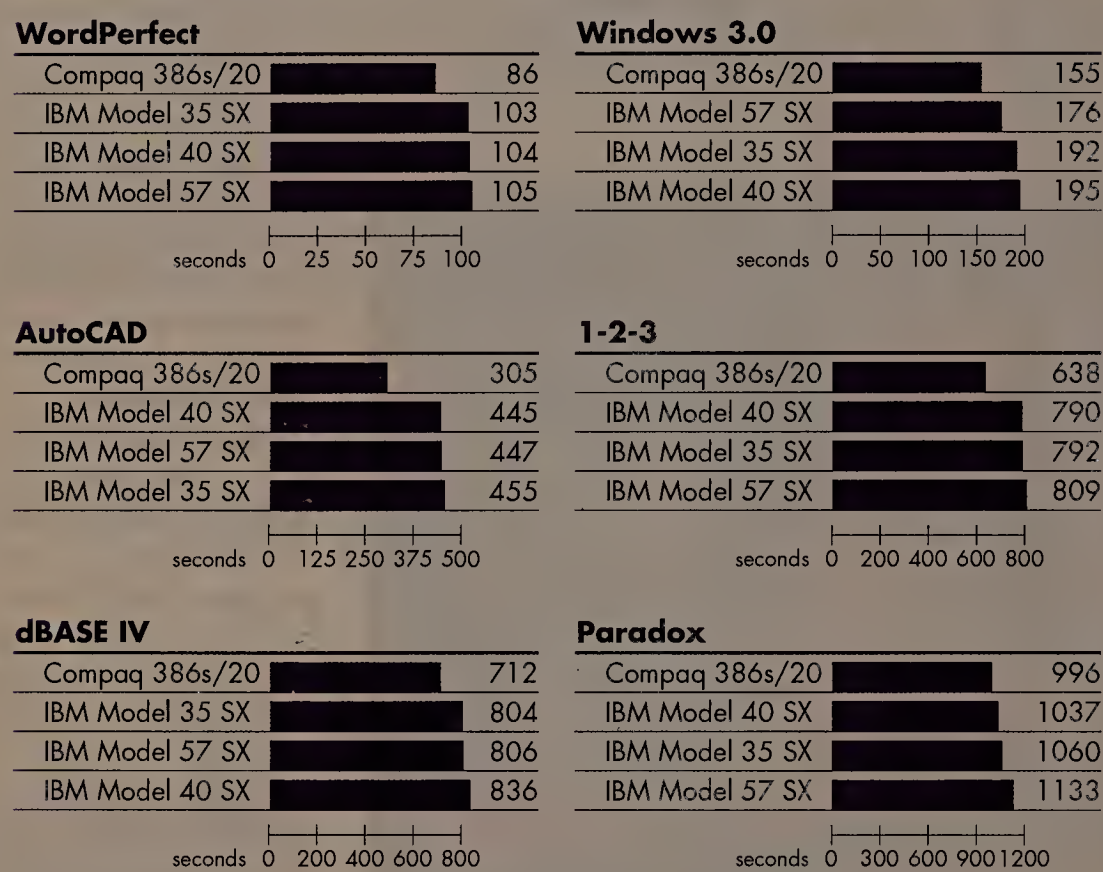
PS/2s Push Price Over Performance

Inexpensive? Fairly. But IBM's new 20-MHz SX systems average over 20 percent slower than Compaq's Deskpro 386s/20.



Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

in the heavy-gauge wraparound case cover.

As befits a member of the PS/2 family, the Model 35 integrates VGA video, floppy and hard disk adapters, and serial and parallel ports on the motherboard, leaving all slots free. (The evaluation system we received had several jumper wires routed across the motherboard, suggesting an early unit.) Three memory sockets hold 1MB, 2MB, 4MB, or 8MB SIMMs; the 2MB module comes standard. With the new 8MB modules, the system can hold 16MB of RAM on the motherboard.

At $1995, the floppy-only Model 35 SX 040 is now the least expensive 386 PS/2, though its raw price is nothing to write home about. Faster 25-MHz 386DX floppy-only clones with equivalent memory and more slots, more bays, and better displays sell by mail for up to a third less; they retail for comparable prices. Clones do not, however, carry IBM's considerable cachet. The Model 35 will be welcomed by corporate IBM shops willing to trade some price and expandability for the warmth and fuzziness of the beloved Blue blanket.

Boxes With Room to Grow

The Model 40 is a more expandable system, 17 inches wide by 15 inches deep with five full-length slots for 8/16-bit AT boards, two more than have ever appeared in a PS/2 desktop. Instead of the usual three 3½-inch drives, the Model 40 can handle three 5¼-inch drives and one 3½-inch.

Nonetheless, the Model 40's chassis is no marvel of engineering. Its 197-watt power supply is unusually large and awkwardly shaped, robbing the enclosure of room for two more 3½-inch drives. And as with the Model 35, the trademark PS/2 drives that slide right into an adapter have been replaced by the old-fashioned kind that require a ribbon cable.

While the Model 40 has three fewer add-in board slots than similar clones, its motherboard includes the VGA video and drive controllers, leaving all five slots available. Boards are mounted horizontally in a tree adapter rising from the center of the motherboard. Base RAM and options are identical to the Model 35's. Price with 2MB of RAM, 1.44MB floppy drive, and 40MB hard disk is $2925.

PS/2 de Resistance

At the top end is the Model 57, a Micro Channel version of the Model 40. The Model 57's performance matched the Model 40's in our benchmarks, but IBM claims the machine will show speed advantages in heavy-duty multitasking thanks to the Micro Channel's support of bus-master devices.

Other key differences between the Model 57 and the Model 40 include a SCSI (instead of IDE) hard disk controller on the motherboard; an additional 2MB of RAM, with 4MB standard and 16MB supported on the motherboard; and the new 2.88MB drive (which IBM will make generally available for $325, $62 more than its 1.44MB drive). The Model 57 goes for $3625 with an 80MB hard drive, $4195 with a 160MB drive.

Besides doubling data on a 3½-inch disk, the 2.88MB floppy can read and write 1.44-MB and 720K disks. If you plan to upgrade to this drive, remember that the new high-density standard requires DOS 5.0. You'll likely need media rated for higher density.

One Step Forward...

The new models round out the PS/2 line, but not remarkably. Except for the 2.88MB floppy drive, no new technology is involved, no significantly new packaging, no new anything. The lower-than-usual prices (for IBM) merely reflect market pressures. The original promise of the PS/2 line—uniquely powerful Micro Channel goodies as well as cableless hardware upgrades—remains largely unfulfilled.

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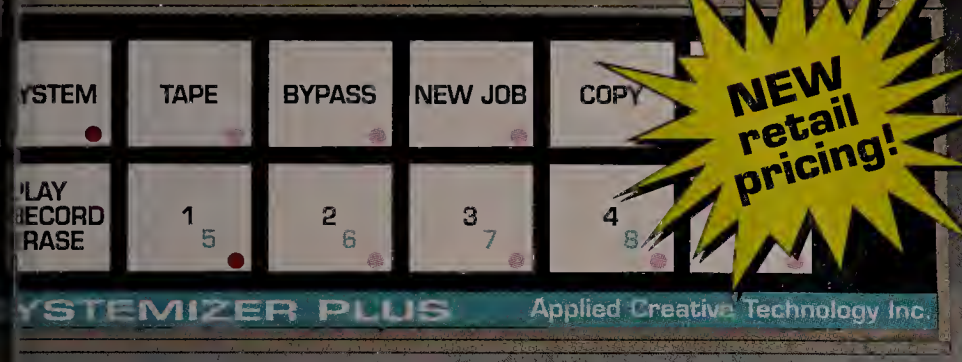

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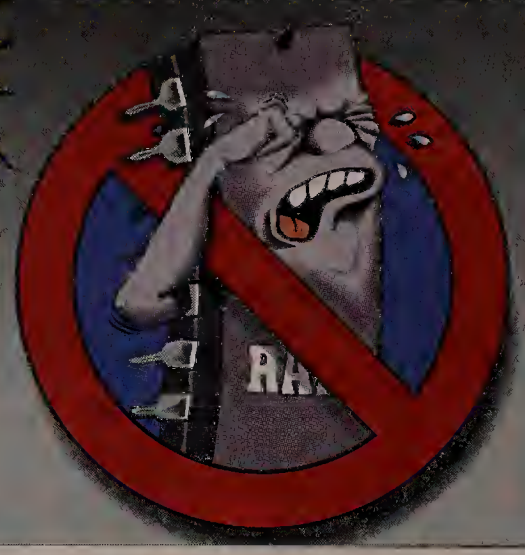

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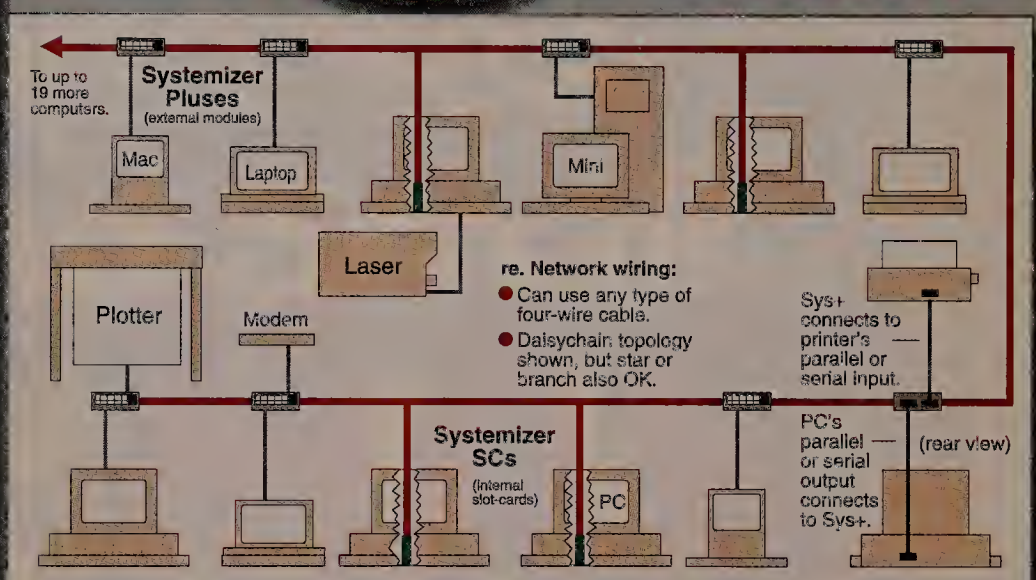

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IBM Introduces 50-MHz 486 Upgrade

The first systems announced for Intel's prized 50-MHz 486 processor are IBM products, and existing ones at that. IBM will offer a 50-MHz 486 upgrade to its PS/2 Model 90 and Model 95 XP 486.

The PS/2 upgrade is a replacement card for 20-MHz, 25-MHz, and 33-MHz Model 90s and Model 95 XPs that IBM claims will double the speed of its 25-MHz systems, and offer half again the speed of 33-MHz systems.

In practice the performance increase may be less dramatic. Standard memory can't be accessed directly at blazing 50-MHz speed, so a 256K secondary memory cache (in addition to the 486's 8K internal cache) is hardwired onto the upgrade board to act as a buffer. When the 486 can't find what it needs in either cache, it adds four wait states for main memory access.

Upgrades are $3695 for 33-MHz systems, $5345 for 25-MHz systems, and $7245 for 20-MHz 486SX systems. They'll probably be available in limited quantities late this year.

Who'll want to upgrade? CAD users, of course, along with those who need a server that actually runs SQL data base programs or other back-end applications rather than simply serving files. For the rest of us, however, an upgrade that costs more than many vendors' 486 systems may be hard to justify.

Has Big Blue lost its ability to innovate?

The latest PS/2s don't advance the state of the art, but they'll doubtless improve IBM's lot. The company's diminished clout notwithstanding, the PS/2 Model 55 SX is still the world's biggest-selling PC. The new additions to the line—models 35, 40, and 57 succeed that system, and their lower cost, greater expansion capacity, and faster clock speed will help them find homes on many corporate desktops.

Alan Kaplan is a contributing editor for PC World.

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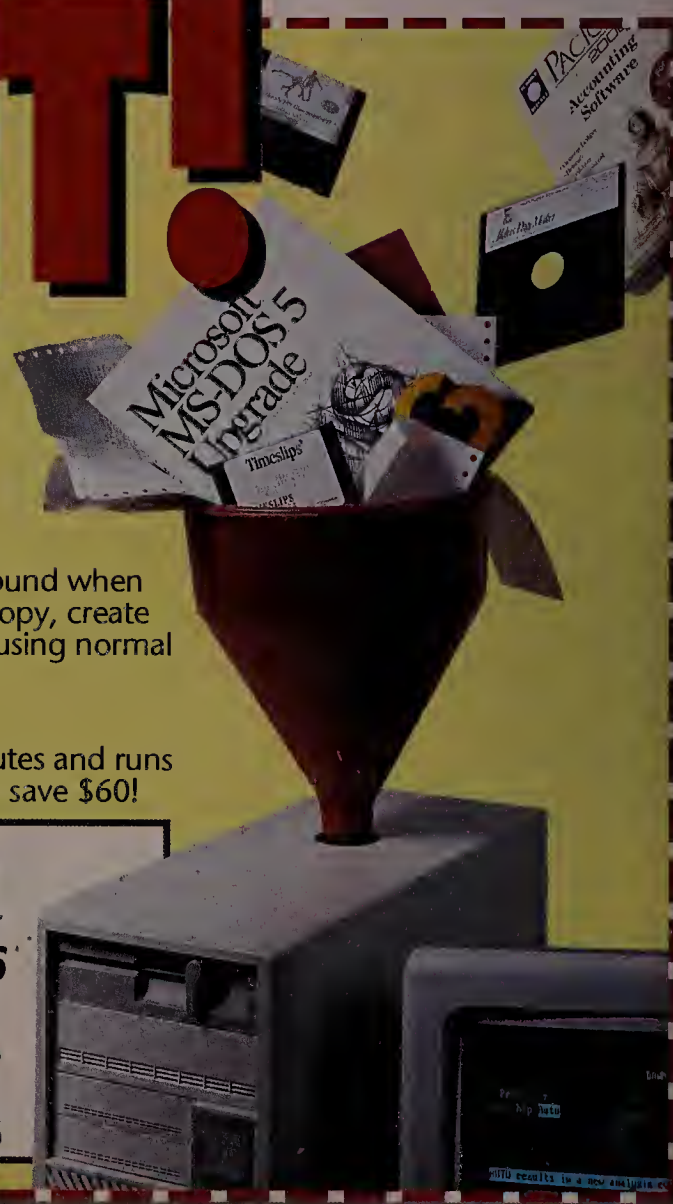

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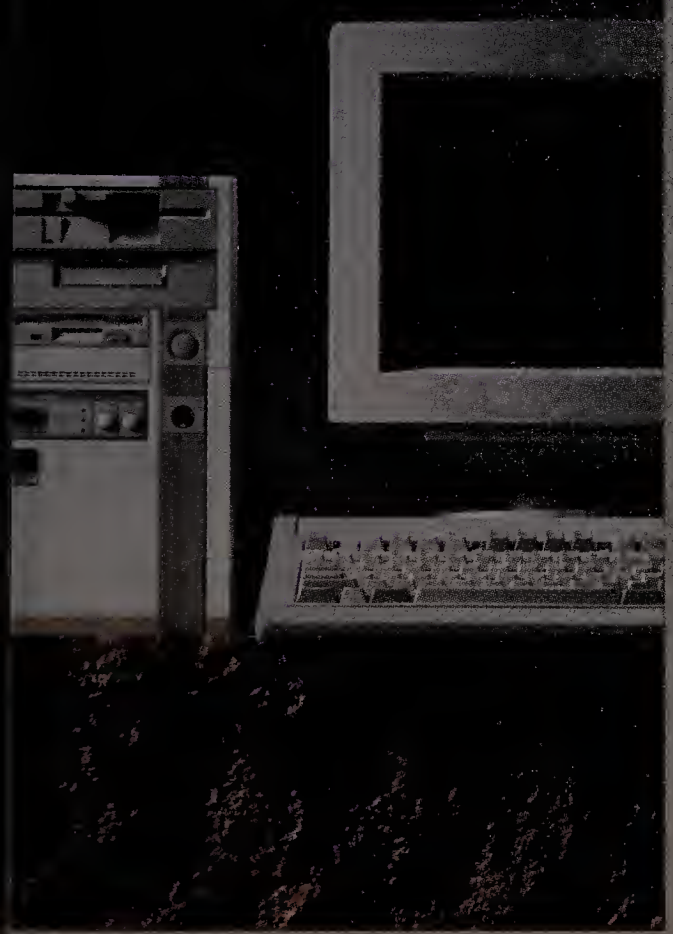

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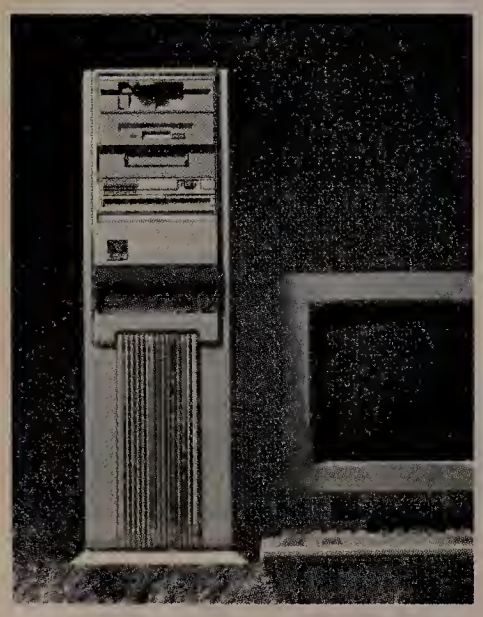

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The Phaser Jet PXi prints vibrant colors and 300-dpi text on the paper of your choice.

Daniel Tynan

Do you need an affordable, plain-paper color printer? If you want to print full-color proofs of marketing brochures, sales catalogs, or product packaging, chances are you do. But until recently, your choices were limited.

At $2500, liquid ink jets handle plain paper cheaply, but their low resolutions (216 dots per inch or lower) make text hard to read. A $10,000 thermal transfer printer gives you 300-dpi output but craves expensive high-gloss paper. And unless you've got $50,000 to burn, don't even think about a color laser.

Now Tektronix offers a fourth option. The Phaser Jet PXi combines the vivid colors and sharp text of a thermal printer with the ability to print on any kind of paper, from photocopier bond to heavy cover stock. For $9995, you also get top-of-the-line graphics and full-tabloid printing capabilities (to the edge of an 11-by-17-inch page).

Hot Stacks of Wax

The Phaser Jet is not your typical color printer. Instead of using liquid ink cartridges or a thermal printer's sheets of colored Mylar, it employs solid ink sticks in four colors (cyan, magenta, yellow, and black), which it melts and combines to create up to 16 million shades. The printer then fuses the ink drops to the paper, allowing light to pass through—essential for printing transparencies. (Still, you'll likely get better transparencies from a thermal, thanks to its thinner coats of Mylar.)

A slot on top of the printer makes adding ink as easy as dropping bread into a toaster. Because you replace each color separately, a four-color page costs about 25 cents—half the cost of thermal output.

All that color talent isn't much good without top-notch fonts and graphics capabilities. The Phaser Jet features Adobe PostScript Level 2, which promises improved performance and better color matching with 1200-dpi imagesetters, as well as 35 scalable fonts. The printer also contains a fast 24-MHz RISC chip and 10MB of RAM (expandable to 18MB) for quick processing of big images.

Even with all that horsepower, the Phaser Jet is more Clydesdale than thoroughbred. Because it applies ink one line at a time, it takes about 2 minutes to print a page of graphics—twice as long as most thermals require.

The Phaser Jet switches automatically among parallel, serial, and AppleTalk ports—a boon for networks that tie PCs and Macs together. A built-in SCSI port lets you hook up a hard disk for storing bushels of fonts; a 200-sheet paper tray and a one-year warranty round out the package.

The Plain Truth

At $9995, the Phaser Jet may be too rich for most users' blood. But as more plain-paper color printers appear later this year, prices are certain to drop. If you're looking to bring color document production in-house, the PXi could be just what the doctor ordered.

Daniel Tynan is an associate editor for PC World.

SNAPSHOT

Tektronix Phaser Jet PXi

The Phaser Jet prints up to 16 million colors at 300 dpi on virtually any kind of paper.

KEY FEATURES

- **Costs 25 cents per full-color page**
- **Adobe PostScript Level 2 and HP-GL modes**
- **Powerful RISC chip for fast page processing**
- **Handles paper sizes up to 12 by 18 inches**

AVAILABILITY

Immediate

PRICING

$9995

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A New Desktop for Windows

Not just another Windows shell, Norton Desktop for Windows adds a bundle of useful disk utilities.

Norton Desktop for Windows' file manager includes a superb file viewer. Icons give access to a screen blanker (Sleeper) and disk utilities. To print a file, simply drag it onto the Printer icon.

John Walkenbach

Norton Desktop for Windows isn't the first attempt to improve upon *Windows'* adolescent file and application management skills—hDC's *FirstApps*, Wilson WindowWare's *Command Post*, and Publishing Technologies' *CBM Desktop Office* address various parts of the problem. But Symantec's solution appears to be the most complete, replacing both the File Manager and Program Manager. And *Norton Desktop* doesn't stop there—for $149, you also get a blockbuster collection of 18 *Windows* utilities, including a backup package, a batch language, and *Windows* versions of Disk Doctor and File Finder.

Drag Till You Drop

Managing applications is distinctly Macintosh-like: You can drag and drop icons to perform common tasks such as printing, deleting, and viewing. The menu system is customizable, and you can hot key between applications.

Norton Desktop lets you nest program groups inside icons, which helps reduce screen clutter and organize applications. For example, you could set up *Excel* so that you click once on the *Excel* icon to display the icons for other *Excel* modules or particular worksheets. The nesting can be independent of your directory structure, so you could set up a Budget icon with subicons for different programs.

The program smoothly integrates file tasks with application management. Besides the usual filing tools, you get a superb *Magellan*-like viewer. You can select all similar files on a drive, regardless of directory, making it easy to delete all BAK files, for example.

Another highlight is *Norton Backup for Windows* (available separately for $129). Like the new *Windows*-based backup in *PC Tools 7.0*, the utility lets you back up while you're working in another application. (See "Product Outlook," August 1991, for a closer look at *Norton Backup for Windows*.)

This isn't a complete *Windows* version of *The Norton Utilities*, but you get the most popular tools. The Disk Doctor lets you diagnose problems in *Windows*, but to fix them you must exit to DOS, where you'll also find Unerase, Unformat, and the Speedisk defragmenter. Back in *Windows*, the Smart Unerase program intercepts delete requests and moves the files to a hidden directory for possible retrieval later, and the Shredder takes files where no unerase can go.

Want more? The Batch Builder is a programming language that lets you create batch files, custom menus, and dialog boxes. You also get a screen blanker, a pair of calculators, and a slick icon editor.

While the upcoming *Windows 3.1* will improve the File Manager, it won't surpass Symantec's offering. *Norton Desktop* adds a new spark to *Windows*.

John Walkenbach is a contributing editor for PC World.

SNAPSHOT

Norton Desktop for Windows 1.0

WINDOWS A slick replacement for the Program Manager and File Manager, *Norton Desktop* also delivers a bundle of handy disk and backup utilities.

KEY FEATURES

- **Drag-and-drop program and file management**
- **Includes Norton Backup for Windows**
- **Batch language**
- **Disk Doctor and other utilities**

AVAILABILITY
Immediate

PRICING
$149

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Reader service no. 676

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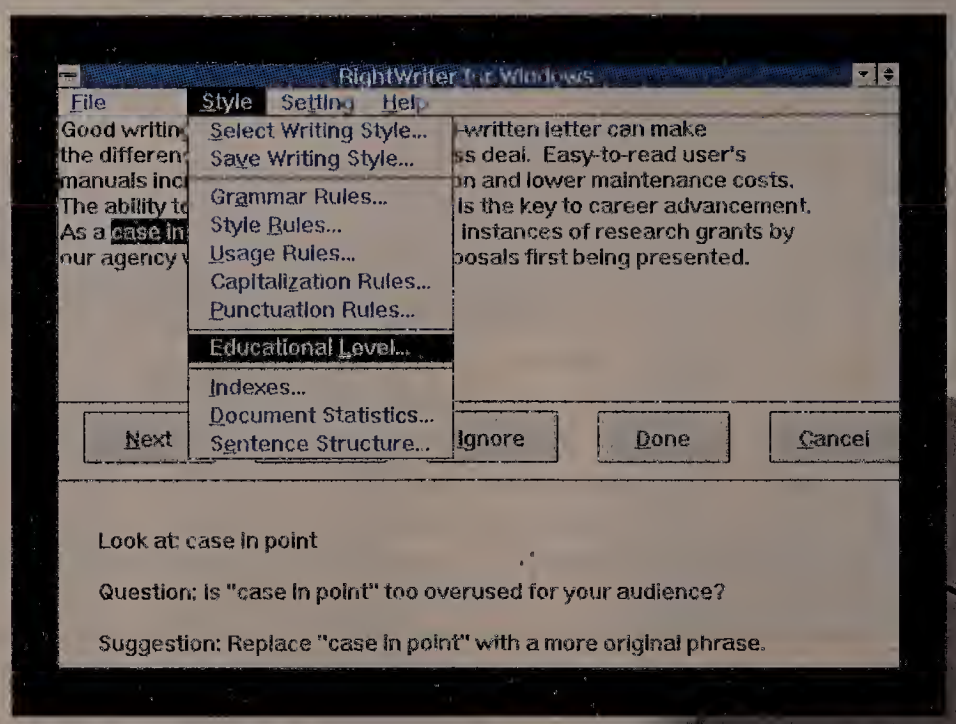

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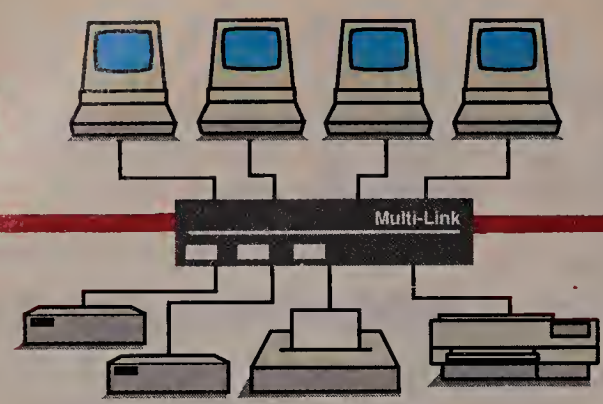
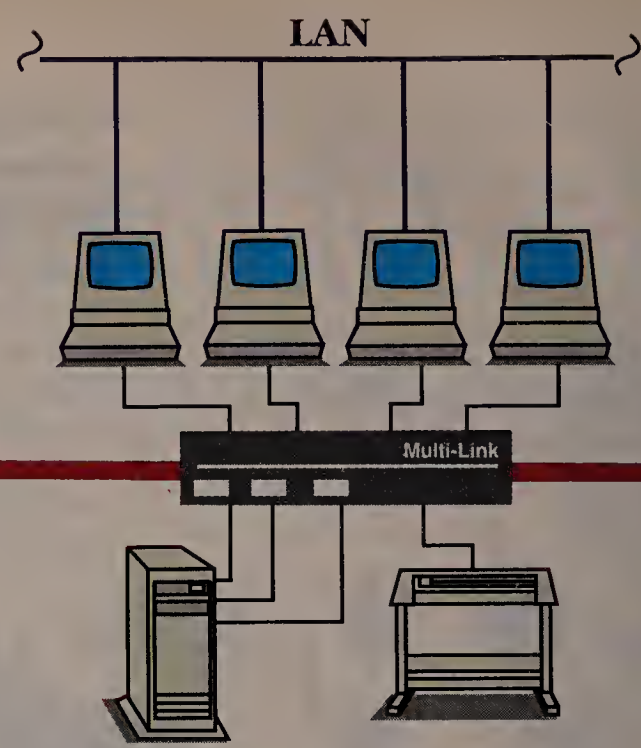
Circle 170 on reader service card





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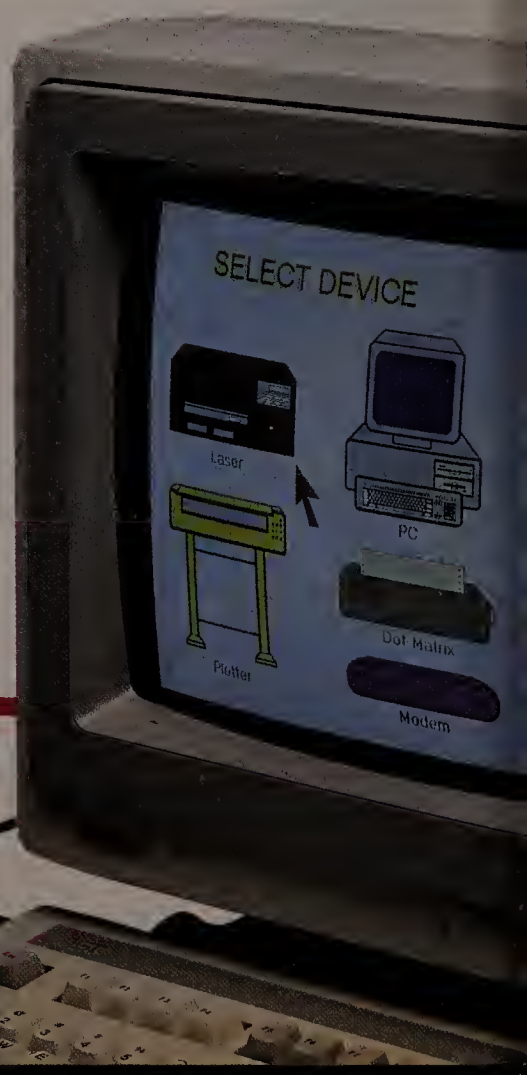

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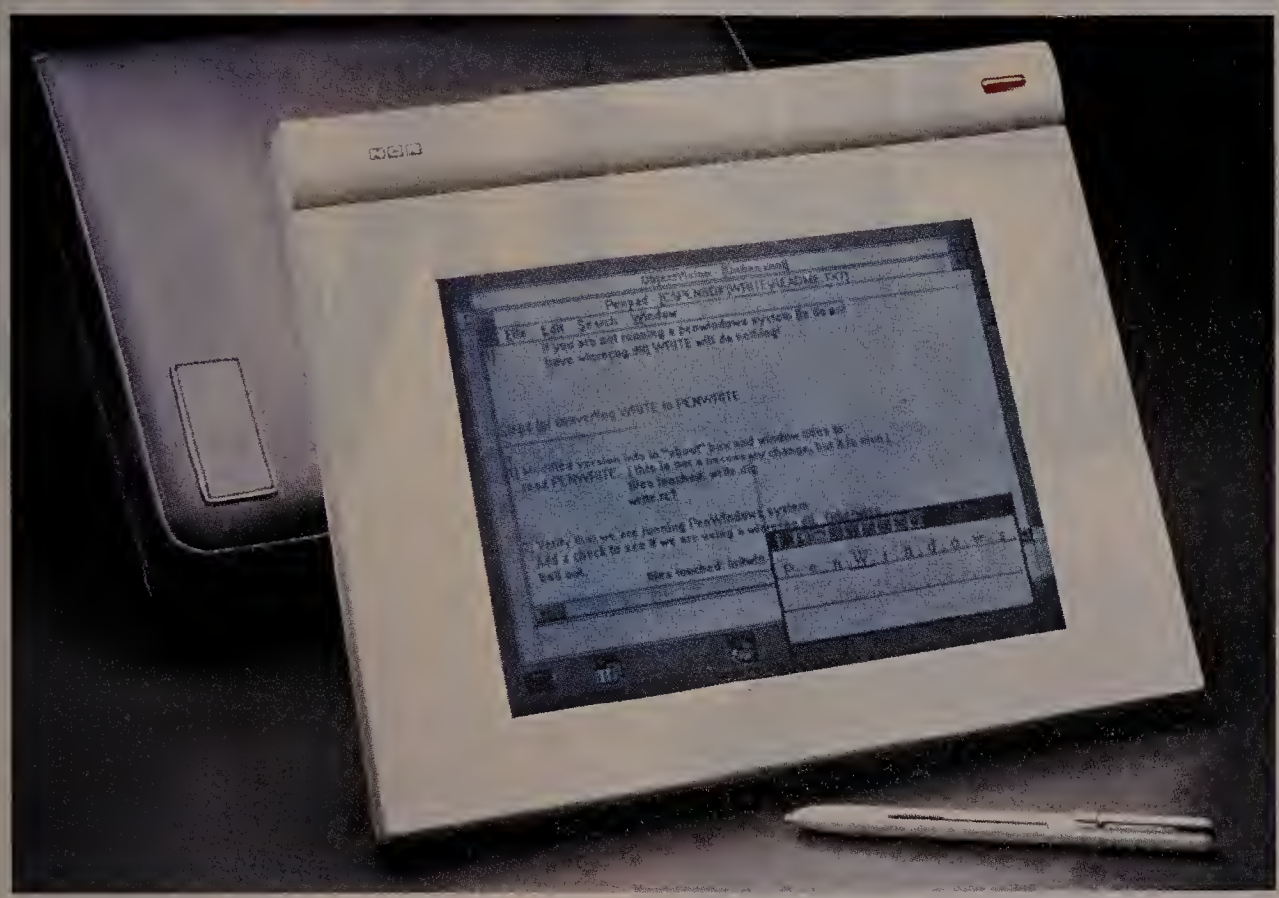
Circle 325 on reader service card

NCR Gestures to the Future

You can walk and do Windows at the same time with this powerful prototype for pen-based computing.



NCR's 3125 Notepad is the first announced system designed from the pen up to run Microsoft's Windows for Pen Computing and Go's PenPoint.

Russell Glitman

The 3125 Notepad is the type of clipboard computer that will be commonplace in the future: flat panel display, no mouse, durable, built-in stylus, and optional keyboard. If you want a head start, get one now. But be warned: Time travel is for the adventurous and well-heeled.

NCR is bringing out the first of a new breed of pen-based computers that will range in size from desktop to palmtop. The 3125, available now, is aimed straight at users who lack a viable computer for their business needs.

The problem with a machine of the future, however, is there's very little software of the future today. Two advanced operating systems that will run on this machine—Go Corporation's elegant 32-bit *PenPoint* and Microsoft's *Windows for Pen Computing*—aren't beyond beta versions yet. These will be available on the unit, which comes with DOS 5.0 and PenOS—an NCR-developed operating system that lets mouse-aware applications use a pen as an input device. *Windows* applications will run on the 3125 when Microsoft's operating system is released.

Working in Stylus

Standing 1 inch tall, this 9.8-by-11.7-inch machine is no harder to hold than a clipboard, except it weighs 3.9 pounds. Using a pen instead of a mouse simplifies navigation—you just put the stylus on the menu item you want and tap. The plastic-tipped stylus also lets you gesture to delete, copy, and move text, graphics, and files.

The 16-shade VGA screen is easy to read and to write on. NCR's trainable character recognition software correctly translated what I wrote—most of the time. (NCR claims a remarkable 98 percent success rate.) Both operating systems offer a pop-up key layout to minimize those painful moments when recognition fails.

The machine is based on the power-saving 20-MHz 386SL chip, and comes with 2MB RAM and 2MB of flash memory (nonvolatile programmable memory that you dedicate to applications). It costs from $4600 to $6740 depending on your mix of the three types of available storage: a 20MB hard disk, up to 4MB on-board RAM and flash memory, and removable RAM cards and flash memory in 2MB and 4MB.

The 3125 is built to withstand 50 g's—the impact of a fall from desktop to floor—and it's water resistent. You can count on 4 to 6 hours of battery life, depending on how you use the power management features. Battery recharge time is 5 hours with the unit on, 1.2 hours with it off. You can connect a keyboard and other peripherals through a 180-pin connector. A 9600-baud fax/2400-baud data modem is optional.

This early-release hardware will let managers check out productivity gains for pen-based systems. That may give them easier arguments for volume orders once pen optimized applications are available in early 1992, and the future arrives.

Russell Glitman is executive editor of PC World.

SNAPSHOT

3125 Notepad

The featherweight 3125 is the first of a new breed of pen-based notebooks for mobile workers who previously had no practical computer option.

KEY FEATURES

- **Runs PenPoint and Windows for Pen Computing**
- **NCR-developed handwriting recognition software**
- **3.9 pounds (3.95 pounds with 20MB hard drive)**
- **4- to 6-hour battery life**

AVAILABILITY

October (limited quantities now)

PRICING

$4600 to $6740

NCR Corp.
1700 South Patterson Blvd.
Dayton, Ohio 45479
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Reader service no. 674

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Seems we've been here before. Once again, the most powerful PC you can buy—in fact, the most powerful in existence—comes from Compaq.

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*March 1991 study published by 1Soft Decision, Inc., including CA-SuperProject 2.0, Microsoft Project For Windows, Symantec's Timeline 4.0, ABT Project Workbench and Scitor's Project Scheduler-5

Circle 39 on reader service card

PRODUCT OUTLOOK

Edited by MIKE HOGAN

WinPrinter 400

Windows and TrueImage Cut Printing Overhead

Programming tricks available through Microsoft's TrueImage interpreter let this 4-ppm laser harness your computer's CPU and memory to give you inexpensive PostScript printing.

Looking for a PostScript laser to use with *Windows?* You may already own half of it. LaserMaster's new WinPrinter 400 uses the muscle of your 386 or 486 computer—the RAM and processor you've already paid for—to give you crisp 400-dpi PostScript printing for a low $1995.

The WinPrinter's 4-ppm "dumb" engine connects to a LaserMaster video interface card mounted in your PC. The smarts are in LaserMaster's version of the Microsoft TrueImage PostScript-compatible interpreter, which runs in the background under *Windows*. You print from your application as you normally would, even from DOS applications.

The bundle includes 50 Adobe-specified Type 1–compatible fonts, which work with *Adobe Type Manager for Windows* for crisply scaled type on screen as well. You can easily switch resolution between 300-dpi LaserJet emulation and 400-dpi printing.

Although software-based PostScript interpreters aren't famous for speed and convenience, LaserMaster claims WinPrinter can run about twice as fast as an Apple LaserWriter II NTX with an AppleTalk (not the slower serial) connection. To achieve that speed, though, you'll want at least 4MB of RAM on a 386 and, for the best performance, a 387 math coprocessor.

LaserMaster exploits the opportunities in *Windows'* 386-enhanced operating mode to gain printing speed while smoothly sharing the 386 CPU with your applications.

WinPrinter can't be shared easily between two or more computers, since it relies on its umbilical arrangement with the software and video interface in the host PC. On the plus side, it does away with concerns about downloading fonts, since any font installed for the WinPrinter software is always ready to print. And if you upgrade to a faster computer, your WinPrinter will speed up too. —*Bob Weibel*

IN BRIEF

WinPrinter 400
WINDOWS This 400-dpi PostScript printer saves you money by tapping the processing power of your 386 or 486 computer.
LaserMaster Corp.
TurboRes Printer Division
6900 Shady Oak Rd.
Eden Prairie, MN 55344
612/944-8286,
612/944-0522 (fax)
Reader service no. 640

INSIDE PRODUCT OUTLOOK

126 **MastersPorts, SupersPorts** Zenith lineup breaks new ground with the very latest in laptop technology.

128 **Hollywood** IBM's boffo presentation graphics package for *Windows* users.

128 **OmniLink/Laser** A low-cost device forwards faxes to your laser printer so you can read them on plain paper and doubles as an external fax-modem.

137 **Image-In-Color** A *Windows*-based scanner utility to polish and fine-tune images.

137 **Peachtree Complete Network Accounting, Client Write-Up** A LAN version of an old favorite, and a *Windows*-based add-on to help accountants review client books.

138 **Publish It 2.0** DTP upgrade boasts better memory management and text flow plus new soft fonts.

138 **SpeedModem Champ** If you can forgo V.32 error checking, here's a 9600-baud modem at a rock-bottom price.

140 **ProKey for Windows** An intelligent macro recorder and script editor for automating *Windows* chores.

142 **MicroPorte 1042** A pocket-sized modem with high speed and accuracy for critical transmissions on the road.

MastersPorts, SupersPorts

Suite of Zeniths on the Cutting Edge

Once the nimblest of laptop purveyors, Zenith Data Systems is trying to regain past glory with a laptop collection that presses all the new buttons in technology.

First up is the MastersPort 386SL, which employs Intel's new power-saving 386SL microprocessor to change the way we use laptops. Like most in its weight class, the MastersPort 386SL turns off screen and drives to stretch the life of its rather typical 3-hour nickel-cadmium battery. But it's the first with a rest/resume mode that turns the CPU clock down to zero MHz and turns off all components except memory and keyboard refresh—drawing about as much power as a keyboard LED. You can hop in and out of your application—even a protected-mode *Windows* application—without ever rebooting and so stretch those 3 hours of battery life over an entire day.

As notebooks go, the $4999 MastersPort 386SL is a little wide and a little high-end. Its 8.3-by-12.4-by-1.8-inch dimensions permit a full-sized, full-travel, 82-key keyboard. Other vital statistics: 6.8 pounds, 2MB of RAM (expandable to 8MB), a 64K cache, a 1.44MB floppy, and a 60MB hard drive.

If you're looking for something cheaper that fits sideways into half your briefcase, you can choose from a 20-MHz MastersPort 386SX for $3999 or the 12-MHz MastersPort 286 for $2699. Both weigh 6.6 pounds and measure 8.5 by 11 by 2 inches. The keyboards are scrunched a little to fit that 11-inch dimension and they have emulated page-control keys. The 386SX ships with 2MB of RAM and a 60MB hard drive, the 286 with 1MB of RAM and a 30MB hard drive. All three notebooks sport a 9-inch diagonal black-on-white VGA screen.

Zenith's SupersPort 486 is the first 486 laptop (25 MHz), while the SupersPort 486SX is the first laptop to exploit Intel's new 20-MHz 486SX chip. Both, remarkably enough, run on batteries for up to 3 hours.

Both 486 units have 12-by-15-by-3-inch cabinets made of magnesium rather than plastic for better heat dissipation and strength. At 10.7 inches, their VGA screens are oversized, and the detachable keyboards come with the Isopoint mouse-equivalent for *Windows* use. With 4MB of RAM (expandable to 16MB) and 120MB hard drives, both offer no-compromise, go-anywhere computing. —*Mike Hogan*

IN BRIEF

MastersPorts, SupersPorts
Zenith's line-up takes early advantage of new processor technology to deliver a laptop for every user.
Zenith Data Systems
2150 E. Lake Cook Rd.
Buffalo Grove, IL 60089
800/553-0331
Reader service no. 644

Zenith takes advantage of Intel's 386SX, 386SL, and 20-MHz and 25-MHz 486 engines to provide no-compromise laptop alternatives.

@Mail

Integrated Mail as Easy as 1-2-3

Spreadsheets and electronic mail are mainstays of productivity at millions of offices. *@Mail* smoothly integrates *1-2-3* and E-mail, letting you share worksheets with colleagues without leaving your spreadsheet environment.

Once installed, this *1-2-3* add-in works from the familiar Lotus menu. You get all the standard E-mail features and can send messages up to 32K in length, attach 64 binary files, automatically keep copies of all messages sent, save an uncompleted message as a draft, automatically add addresses from incoming messages to the address book, and exploit a host of other nice touches that can aid a mail-oriented work group.

But the real payoff is *@Mail*'s attention to spreadsheet detail. You can quickly attach a worksheet you've just completed to an *@Mail* message by typing 'current' in the Attachments field; you don't have to worry about the spreadsheet's exact title and location. The worksheet arrives in your co-workers' mailboxes with all formulas and macros intact, and recipients can launch *1-2-3* from the worksheet. Or, you can highlight a range and paste it into a message. Most strikingly, you can combine *@Mail* with macros to dispatch messages automatically when a specified value appears in a worksheet—for example, to signal an alert when inventory falls below a crucial level.

@Mail requires 120K of memory and works with *1-2-3 2.x* and *Symphony 1.x* and *2.x*. The initial version requires MHS messaging support on the back end (either a network or personal copy of MHS software). *@Mail* talks to native MHS network packages such as *Da Vinci eMail* and, through gateways, to *cc:Mail*, *Microsoft Mail for Networks*, MCI Mail, and other systems. A starter kit costs $129.95; you can add a single network user for $79.95 or buy an eight-user pack for $395. —*Eric Bender*

IN BRIEF

@Mail
This *1-2-3* add-in delivers E-mail talents designed to help spreadsheet users work together.
Beyond Inc.
38 Sidney Street
Cambridge, MA 02139
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(MicroCAD News review)

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to DesignCAD 3D version 3.1: A Basic-like programming language entitled BasicCAD. We added new commands. We added hardware support for dozens and dozens of new devices We made hundreds of overall internal enhancements! We improved the manuals, the packaging and the speed!

How much extra did we charge?

Nada. Nothing. Zip. No extra charge at all. Oh, sure...our accountant said we could increase the price. Our lawyer said there was no legal reason not to charge more. A minister said we had no moral obligation to keep the same price! So, why didn't we raise the price for DesignCAD 3D version 3.1? Because...in the Great American Tradition we said "Aw...What the Heck. Let's see the other guys beat this price!" DesignCAD 3D version 3.1 sells for $399.

Does this include everything?

Yes. We include everything! The programming language, the hardware device drivers (more than 450), built-in shading capability, hidden line removal capability, solid-object modeling capability, translators to-and-from other file formats, are all included!

How can you afford to sell a program like this at such a low price?

This is our most often asked question. We have a simple answer. Volume. We sell thousands of these programs each month! If we were to charge thousands of dollars per copy (like our competitors) we would restrict our sales to the professional trades only. By lowering our price we sell to professional architects and engineers as well as the ordinary individual!

Many ordinary individuals purchase DesignCAD 3D for personal projects. Many people purchase DesignCAD 3D and perform CAD Drafting at nights and on weekends as a second job! People design "dream homes" and "widgets". The uses are limited only by YOUR imagination!

Remember - American Small Business Computers also sells a 2D version of DesignCAD. It costs only $299! Write or call for FREE brochures that will help you determine which program best suits your need.

American
Small Business Computers, Inc.
327 South Mill Street • Pryor, Oklahoma 74361
(918) 825-4844 • FAX (918) 825-6359

Circle 306 on reader service card

Hollywood

Opening Windows Wider for Professional Presentations

With WYSIWYG displays that let you visualize your work, extended memory capabilities, tighter integration between packages, and advanced color support, *Windows 3.0* offers a well-equipped studio for presentation graphics software. Among this year's bumper crop of *Windows* presentation packages, IBM's multitalented *Hollywood* stands to be a superstar.

The $495 package helps you past the biggest hurdle in creating effective presentations—that first empty screen. *Hollywood* starts you off with professionally designed templates that include smooth layouts and a range of color combinations. You look at sample templates and pick one, modify it as you like, and create a master page for elements (such as a logo) that you want to place on every page.

Hollywood's slick integrated outliner then lets you quickly create your presentation by entering text (or importing it). Everything you do in the outline is incorporated in the presentation (similarly, any change you make on a presentation page flows back to the outline). Your work is speeded by search and replace and a spelling checker. You can switch to a light-table–style view to see the sequence of pages you're creating.

The package offers a complete suite of presentation aids, starting with a highly customizable toolbox. A rich charting module lets you import *1-2-3* or *Excel* data and then view and pick from a host of chart types, including such bonuses as 3-D charts with adjustable depth. You'll also find full-blown draw and paint features, along with a generous selection of clip art. *Hollywood* bundles in Bitstream Speedo on-the-fly font generation, with two font families; a text tool lets you achieve still glitzier effects. You can automatically spin off speaker notes and handout pages. Additionally, *Hollywood* lets you create screen shows with artful special effects, and you don't need the package to run them on other *Windows* PCs.

Hollywood is eager to work with outside talent; it imports 11 graphics formats and comes with a communication package that permits overnight delivery of slides from the MagiCorp service. Like other stars, it doesn't accept cheap accommodations—you'll want a 386 with at least 4MB of memory and more than 8MB free on the hard disk. —*Eric Bender*

IN BRIEF

Hollywood
WINDOWS IBM's *Windows* powerhouse brings a formidable collection of well-thought-out tools to the creation of business graphics presentations.
IBM Desktop Software
472 Wheelers Farms Rd.
Milford, CT 06460
800/426-7699
Reader service no. 642

OmniLink/Laser

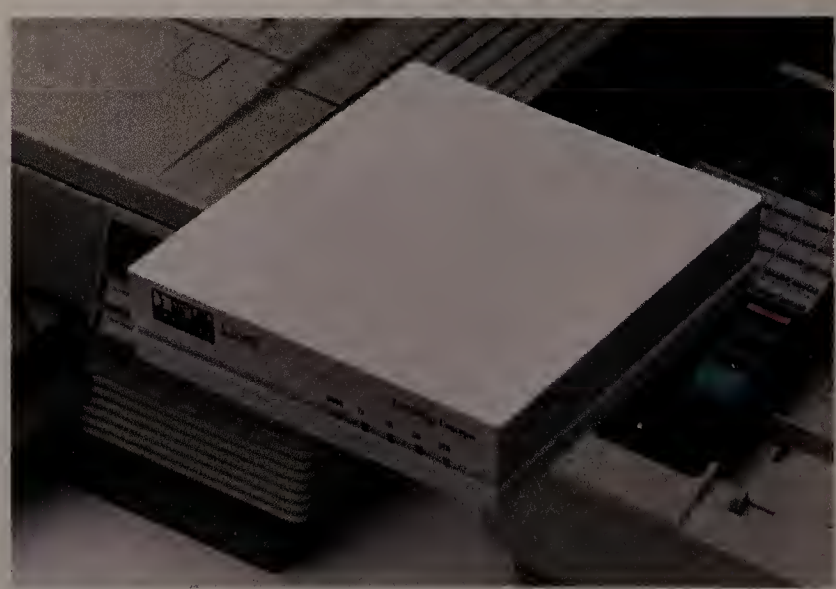
Fax Output You Can Live With

The output from most thermal fax machines is so shoddy, many users photocopy their thin, curling faxes so they can read them on plain paper. While you can buy fax machines that provide a high-quality plain paper option, they usually cost much more than standard fax machines.

Technology Concepts solves the puzzle with OmniLink/Laser—a device that sits between any standard fax machine and any LaserJet-compatible laser printer. Not only can it forward fax machine output to the high-quality printer, a low-cost option lets you attach it to a PC to act as an external fax-modem.

It's similar to Hewlett-Packard's LaserJet Fax, but at $499, OmniLink/Laser costs less than one-third as much as HP's product. Still, it doesn't offer the LaserJet Fax's send capability unless you buy the PC option, and it receives at a standard 200-dots-per-inch (dpi) resolution instead of the finer 300-dpi resolution you get when HP LaserJet Faxes communicate at both ends.

You can take the fax machine out of the loop and set up the OmniLink/Laser to receive faxes directly over a separate phone line; that way, callers get through more easily. If the printer is in use, incoming faxes wait in line in the OmniLink/Laser—you get 30 pages of memory (512K), but you can upgrade to 60 pages (1MB) for $129.



This group III fax lets you use your own HP-compatible laser printer for high-quality fax output at a good price.

IN BRIEF

OmniLink/Laser
This device lets you use your laser printer to print faxes on plain paper. Add an optional PC connection, and you've got an external fax-modem unit.
Technology Concepts
1159 Triton Dr.
Foster City, CA 94404
800/852-6881,
415/578-0892 (fax)
Reader service no. 646

With the separate $129 fax-modem option for your PC, you can use the OmniLink to send faxes right off your computer screen. The unit also includes a Hayes-compatible 2400-baud modem with communications software. Advantages over a fax board: You save a slot, and you get true background faxing—you can turn off your PC at night and still get the fax. —*Eric Brown*

ZEOS

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Take it from the experts:

ZEOS NOTEBOOK 286
Esc
F1
F2
F3
F4
F5
F6
F7
F8
F9
F10
F11
Tab
Caps Lock
Shift
Fn
Ctrl
Alt

A few expert opinions:

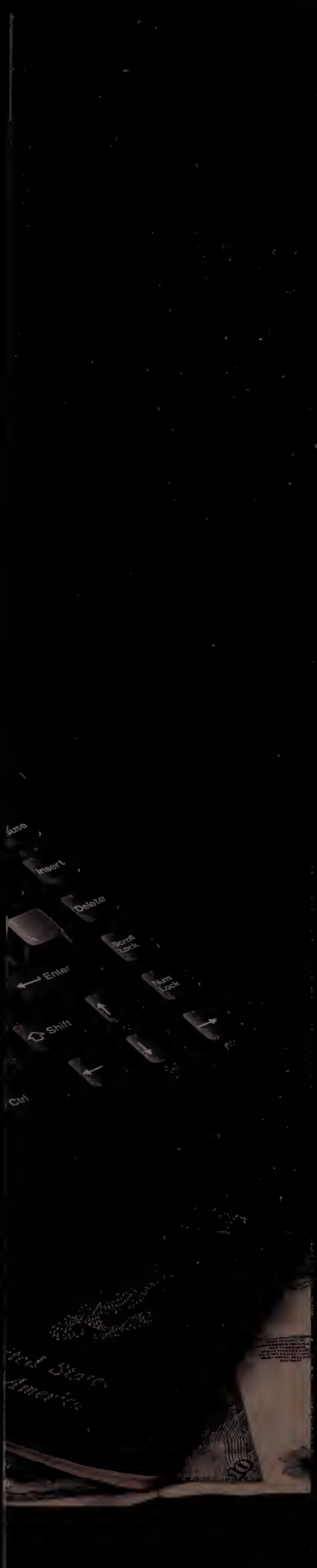
"There's a new king of the hill–the ZEOS Notebook..." – PC Magazine, Editor's Choice

"ZEOS' Notebook...it's the one to buy..." – PC World, Best Buy *"The ZEOS Notebook...a clear winner...why settle for less?"* – Byte

"This notebook is a steal." – InfoWorld *"The ZEOS beats the Compaq."* – PC Computing

"The ZEOS Notebook...delivers astonishing value...sensational." – Portable Office *"An outstanding value."* – PC Week

Outstanding Indeed! And The Price?



ZEOS NOTEBOOK

Light Load

PC MAGAZINE EDITOR'S CHOICE

PC WORLD BEST BUY

"THE HOTTEST DEAL ON THE NOTEBOOK MARKET"
—PC MAGAZINE, EDITOR'S CHOICE

"King of the Hill... Sensational... The best price-performer... Astonishing value ...A steal... The number one contender..." We couldn't have said it better ourselves. Winner of PC Magazine's Editor's Choice Award and PC World's Best Buy Award, the experts love the ZEOS Notebook. And you'll love it too. At only $1995 for our '286 version and $2295 for our new 386SX, you simply can't find a better notebook anywhere!

As PC Magazine said, the ZEOS Notebook "offers a top notch combination of power, weight, features and price..." And you can pick your power! Choose our '286 version or go for the incredible new ZEOS '386SX. Combine either with our high speed hard disk, built in 1.44MB floppy drive, VGA and more—you've got the greatest notebook going at any price!

INCREDIBLE DESKTOP FEATURES IN A NOTEBOOK.

In fact, it's really like owning a full featured desktop that you can take with you anywhere! Look closely at the details. Like our crisp 10" VGA display. The ultimate in sparkling clarity, it features advanced fluorescent backlighting for vivid VGA graphics. Then, the drives.

Two drives are better than one! First, your notebook will include our whisper quiet high speed, high capacity hard disk. It will read and write your data so fast chances are you'll hardly know it's there. Then we're building in an industry standard 1.44 Megabyte 3.5 inch floppy as well.

While most notebooks don't include a floppy drive at all, you're really going to appreciate your ZEOS notebook's industry standard 3.5" floppy. It makes loading software and transferring files a breeze. Simply toss in your 1.44 and it's done. Anyway, can you imagine a desktop system without a floppy? We couldn't either. That's why your ZEOS notebook has one. It's great!

But the features of your incredible new ZEOS Notebook don't just stop there. Detail after detail we're giving you more than anyone else. Much more, for much less. Take a closer look.

DETAILS MAKE THE DIFFERENCE!

For instance, the battery system of your new notebook is the most advanced on the market. You can quick charge, or trickle charge, any time your system is plugged in. You can also take the battery out and use the optional charging stand if you wish.

From

Now, you can
computing pov
The incredible Z

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and warranty details. The following are trademarks of their respective companies: ZEOS (ZEOS International, Ltd.); © 1

'286 AND 386SX

t and ded.

Either way, you're sure to appreciate our light weight snap-in, snap-out battery packs. They're so light and easy to use, you can easily take an extra one with you on those really long trips. You can get even more life out of a single charge by using our programmable power management system. Hour upon hour of Notebook computing power!

CONNECTIVITY TOO!

Your new ZEOS notebook is a great connectivity tool. Utilizing our optional built-in 2400 baud MNP Class 5 modem, connectivity buffs will find themselves logging on at every turn. And speaking of connectivity, we've kept the I/O easy to use too. Because unlike many of the others, your new ZEOS notebook has the same industry standard port connectors you'll find on your larger desktop system. Completely compatible! Serial and Parallel ports; even an external VGA connector. All industry standard and ready to go the minute you receive your system.

It's attention to detail that makes the difference. Tens of thousands of hours of development time have been invested. We've been thinking and re-thinking exactly what you want in a notebook, and now we're building it for you. We think you'll agree, it's an incredible product. Plus, your new notebook is backed by the best support in the industry, 24 Hours a Day.

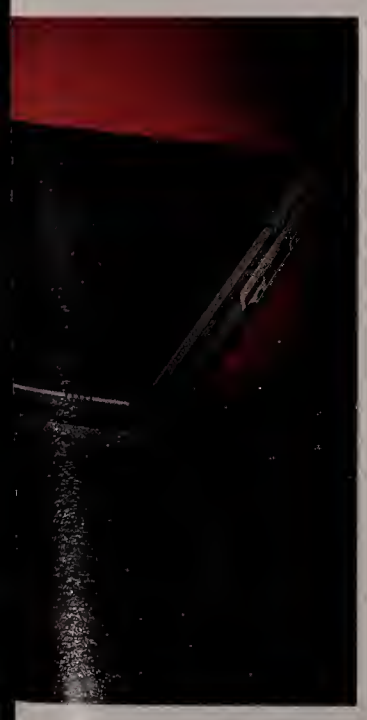
$1995!

ZEOS 24 HOUR A DAY SUPPORT.

After all, it was ZEOS that invented 24 Hour a Day Toll Free Sales and Technical Support. We're always here to help. Any time you need us your telephone is a Toll Free Hotline—direct to your own personal Technician. 24 Hours a Day, 365 Days a Year. Now that's ZEOS value. But we don't stop there either.

Your new notebook is also backed by our 30 Day Absolute Satisfaction Money Back Guarantee and One Full Year Limited Warranty. You're going to be very satisfied. We don't just say it. *We Guarantee It.*

take desktop
ver anywhere!
EOS Notebook.



ORDER YOUR OWN ZEOS NOTEBOOK NOW!

You can order your new ZEOS notebook *right now*. Simply pick up the phone and give us a call at 800-423-5891. And don't forget the extra goodies. Like larger hard drives, carrying cases, and extra batteries. All these are available now in money saving packages. You're going to love your ZEOS notebook. That's a guarantee!

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NOW. YOUR COMPLETE '286 NOTEBOOK! VGA, 20MB HARD DRIVE, 1.44MB FLOPPY AND MORE. LIGHT AND LOADED! INCREDIBLE.

ONLY $1995

386SX ONLY $2295!

- '286-12 or '386SX-16 CPU.
- 1MB DRAM, expandable to 3 or 5MB.
- 20MB High Speed HDD.
- Built in High Density 3.5" 1.44MB floppy drive.
- High Resolution VGA display. Fluorescent backlit 640x480, 32 grey scales. Bright and clear!
- Removable quick charge NiCad battery. Two hour plus battery life typical, more using Programmable Power Management!
- Quick charge or trickle charge using included AC power adapter.
- Extra battery packs and external charging stand available.
- 82 key keyboard. True 101 key emulation.
- Industry standard Serial and Parallel Ports.
- VGA port for external VGA color display. Great for demos!
- Total system weight under seven pounds with battery!
- 30 Day Absolute Satisfaction Money Back Guarantee and ZEOS Customer Satisfaction Package.
- One Full Year Limited Warranty.
- 24 Hour a Day Toll Free Technical Support, 365 Days a Year.

ORDER NOW TOLL FREE:
800-423-5891

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Minnesota: 612-633-4591
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Open 24 Hours a Day, 365 Days a year!

ZEOS® INTERNATIONAL, LTD.

vailable. All prices and specifications are subject to change without notice. Please call to confirm pricing, specification
990, ZEOS International, Ltd., 530 5th Avenue, N.W., St. Paul, MN 55112 USA.

The ZEOS Guide to the Perfect Notebook:

PROCESSOR: PC Magazine recommends a '286 or '386SX processor pointing out that "8086- and 8088-based portables have only half to a third of the computing power of a 286." That's why ZEOS offers you your choice, '286 or 386SX! More power for you. After all it's just like a 6.5 pound desktop!

DRIVES: *Two drives, built in!* A whisper quiet high speed 20 Megabyte hard disk *plus* a 1.44 Megabyte 3.5 inch floppy. Remember, with a built in floppy drive you don't need to fool around with strange interfaces to load and transfer files.

VIDEO: ZEOS raises the ante to VGA! We're talking about bright and crisp VGA displayed on one of the largest notebook screens in the industry. The display also features advanced fluorescent backlighting, 32 grey scales and 640 x 480 resolution. Plus, it can be adjusted to any position over a 135° angle and features easily adjustable brightness and contrast controls. Easy viewing under virtually any lighting conditions. You can connect to an external VGA color monitor too!

GREAT BATTERY FEATURES: Every battery feature you want. You can plug your notebook in and "quick charge" the battery in less than one hour or you can "trickle charge" while in use. Plus, your battery easily snaps out allowing the quick installation of an optional replacement battery. It's great to be able to carry a light weight spare for those especially long trips. An optional battery charger stand is available as well.

INTELLIGENT POWER MANAGEMENT: Your new ZEOS notebook features an intelligent programmable power management system if you wish to use it. Based on the length of time since your last keystroke, you may reduce CPU speed, display screen backlighting etc. Full power is immediately restored at the stroke of any key. The system even knows *not* to use the power management system when you are operating on AC power!

CHECK IT OUT!

Now, you can take desktop computing power anywhere! Your ZEOS notebook has many features of obvious importance. Also, there are a number of features that are subtle yet critical to your ultimate satisfaction. We'll go over them here one by one. We think you'll agree your new ZEOS Notebook is the one for you!

SYSTEMS STATUS AT A GLANCE: Yes, monitor eight key system components at a glance! We've equipped your new notebook with eight LED indicators which monitor disk access, keyboard functions and power status. There is even an audible alarm which may be programmed to inform you of a low battery condition and to let you know if the cover is closed with the power on. Now that's one smart notebook!

DESKTOP KEYBOARD FEATURES: We're talking 82 full size keys with full 101-key emulation. And the keyboard isn't squeezed either. The distance between the "Q" key and the "[" (left bracket) key measures 7.5 inches, just as PC Magazine suggests. The keys are of standard size, plus touch typists will love our full 3.5mm keystroke. Type for hours and love it!

CONNECTIVITY AND I/O: Keeping in touch is easy when you order our internal 2400 baud MNP Class 5 modem. Simply plug in the phone line and dial away. How about I/O ports? Many notebooks don't have them and if they do they're often non-standard. But your ZEOS notebook has *industry standard I/O*—serial, parallel and VGA. Just like your desktop!

FCC & UL APPROVALS: Your new ZEOS notebook features both FCC Class B and UL approvals. We've also met CSA and VDE requirements too, just for good measure. Quality and reliability.

WATCH THE DETAILS TOO: Like memory expandability. One Meg comes standard, you can also order a total of 3 or 5MB as a factory option. And lots of other details. Like a recessed power-on reset button, a soft carrying handle, built in speaker and more. You're going to love it! And there's no reason to wait.

CALL NOW TOLL-FREE:
800-423-5891

Your New ZEOS Notebook. Take your pick!

As a '286
Only $1995!

As a '386SX
Only $2295!

'286 or '386SX, Hard Drive, Floppy Drive, VGA, Under 7 lbs., Beautiful!

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ZEOS IS THE LEADER

10 Good Reasons To Buy From ZEOS®

24 HOURS!
ZEOS is Open
24 Hours a Day,
365 Days a Year!
Toll Free!

Reason #1
"Overall Excellence."

As *PC Magazine* said "Price is always a consideration. So are benchmark test results. But both factors can be deceiving, which is why we consider them in the context of other aspects that will make the difference months and years down the road."

These are the attributes which *PC Magazine* used in awarding ZEOS the coveted Editor's Choice, not once but *seven* times. And "Overall Excellence" are the very words *PC Magazine* used in describing ZEOS systems comparing them to all others.

Reason #2
Dazzling Performance.

In one recent '386 review, *PC Magazine* awarded ZEOS Editor's Choice. "The ZEOS '386 blows away every other computer... a smart choice" is what they said. And in another recent review, *Government Computer News* said the ZEOS 33MHz '386 is "arguably the fastest MS-DOS and OS/2 micro in the world."

Dazzling Performance is built into every ZEOS system. It's a key component of ZEOS Overall Excellence.

Reason #3
Exceptional Quality.

PC Resource Magazine put it this way, "ZEOS... provides quality comparable with IBM or Compaq and does so for about 70% of the price." ZEOS uses only the very best components. And every system is fully tested and burned-in right in our own labs.

Reason #4
Value.

InfoWorld says, "We find the ZEOS '386 an excellent value. Speed: Excellent. Compatibility: Excellent. Value: Excellent." *Personal Computing* said, "ZEOS...is the best value we've come across...its performance is right up there with the slickest, most expensive PCs you can buy."

Reason #5
Warranties and Guarantees.

ZEOS believes in its products. That's why we offer each and every customer our 30 Day Absolute Satisfaction Money Back Guarantee, no questions asked. Plus, our One Full Year Limited Warranty and Express Parts Replacement Policy. Optional On Site Service is available too. Call for details.

Reason #6
24 Hour Toll Free Technical and Sales Support.

At ZEOS, the customer is #1. That's why we invented 24 Hour a Day Tech Support. For *your* convenience. If you buy a product from us we feel we should be there to help, any time of the day or night. Give us a call Toll Free! 800-423-5891. Anytime!

Reason #7
Experience.

Almost unique in the mail order computer industry, ZEOS maintains its own chip level Research and Development staff. In addition to Systems Manufacturing, we also operate our own Board Level Manufacturing facility.

ZEOS has been involved in Research and Development since our incorporation back in 1981. Our strong and experienced Research, Manufacturing and Technical Staff translates into superior factory direct computer systems for you.

Reason #8
A Sterling Reputation.

In magazine after magazine and review after review ZEOS systems are cited for Overall Excellence, for Excellent Value, as the Right Choice and so on. All of this is flattering but the most important thing is this: What do our customers think? Frankly, they love us. The systems and the support. That means more to us than anything.

Reason #9
Easy to Buy.

ZEOS systems are easy to buy. You can pick up the phone any time of the day or night and order your new ZEOS computer. And we accept MasterCard, Visa, Discover, American Express, and Corporate Purchase Orders from Fortune 1000 Companies, Colleges, Universities and Governments. Complete Leasing Programs are available as well.

And now the Z•CARD! It's your very own ZEOS Credit Card and you can apply today. With the Z•CARD you can charge your ZEOS purchases and pay in easy monthly installments. It's just like a Bank Card. Why not apply for your Z•CARD now!

Reason #10
You're Going to be Very Satisfied.

When it comes right down to it, you're going to be very satisfied with your new ZEOS system. Our goal is your complete satisfaction. And that's our commitment to you. To quality. To performance. To reliability and support. To *Value.* We don't just say it, *we Guarantee it!*

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Image-In-Color

Taking Image Enhancement to Photo Realism and Beyond

Image-In-Color's support for 24-bit color and image editing and retouching tools lets even the artless improve upon scanned-in photos.

The release of *Windows 3.0,* with its support for 24-bit color, increased by a millionfold boost over the colors available in previous versions. With a 24-bit display adapter you can dip into a palette of 16 million colors, more than enough to display photo-realist images. *Windows*-based scanner utilities like *Image-In-Color* give you tools for image editing and retouching as well as color enhancement and separation.

Image-In-Color provides a full quiver of image-editing and color-enhancement tools, but its main strength lies in breadth of coverage, including text recognition and *autotracing,* the conversion of bitmapped images to line art. The intent is to offer a practical, versatile scanner accessory rather than one based on darkroom image editing or other specialized features more likely to appeal to graphic arts professionals.

Color and gray-scale scanner controls are de rigueur, and the package lets you apply data compression and decompression while saving or retrieving your scanned or retouched images. You get a fistful of retouching tools—paintbrush, spray can, drawing pen, color fill, and convenient color palettes. Other tools let you focus your retouching or color enhancement efforts on a portion of an image. You'll find functions for resizing, cropping, and rotating images as well as filters for sharpening or softening an image or creating special effects.

But it's text recognition and auto-trace capabilities that set *Image-In-Color* apart. The program has text-scanning options not widely available.

Image-In-Color's autotrace lets those with less artistic talent automatically outline a scanned-in image and then manipulate the outline's size and other characteristics with draw tools. You can even open and work on image files in Mac formats like PICT and MacPaint. You also can create overlapping selection (masking) areas or form a new selection area where the two intersect. One shortcoming is the lack of multiple clipboards (Micrografx/Astral's *Picture Publisher Plus* has nine).

While this $795 program's minimum requirements include a 286-based PC with 2MB of memory, VGA, and *Windows 3.0,* you'll find your options limited without a 386SX-based machine, 4MB of memory, a large hard disk, and a mouse. —*Bob Weibel*

IN BRIEF

Image-In-Color
Image-In-Color mixes image editing with text recognition to provide a businesslike integrated scanner utility.
Image-In, Inc.
406 E. 79th St.
Minneapolis, MN 55420
800/345-3540,
612/888-3665 (fax)
Reader service no. 652

Peachtree Complete Network Accounting, Client Write-Up

Peachtree's Easy-to-Use Accountant Goes Multiuser

Peachtree Software's latest entry in its ongoing race with Dac Software to provide small businesses with full-featured but easy-to-use accounting is the long-awaited network version of *Peachtree Complete III.*

The all-in-one *Peachtree Complete Network Accounting* includes the full set of modules found in the standalone version—general ledger, accounts payable, accounts receivable, invoicing, purchase order, payroll, inventory, job cost, and fixed assets—as well as *Data Query II,* a separate package for querying the accounting data base and creating customized reports.

Peachtree Network Accounting requires DOS 3.1 or later and 640K of RAM. Servers should be equipped with a hard disk and enough memory to support the network operating system. The program retails for $695 and supports NetWare and *Lantastic,* as well as other NETBIOS-compatible LANs.

Also new is a *Windows 3.0* package for accountants and bookkeepers. *Peachtree Client Write-Up* is a general ledger package designed to assist financial professionals in reviewing client books and preparing detailed financial statements.

Client Write-Up accepts information directly from both *Crystal Accounting* and *Peachtree Complete III.* It costs $995 (for either standalone or network version) and comes with a 60-day money-back guarantee when it is purchased directly from Peachtree Software. Buyers will also receive a free copy of *Crystal Accounting.* —*Roberta Furger*

IN BRIEF

Peachtree Complete Network Accounting, Client Write-Up
WINDOWS The veteran easy-to-use accounting package now runs on a network, while a Windows-based add-on makes it easier for your accountant to review your books.
Peachtree Software
1505 Pavilion Pl.
Norcross, GA 30093
800/247-3224
Reader service no. 650

Publish It 2.0

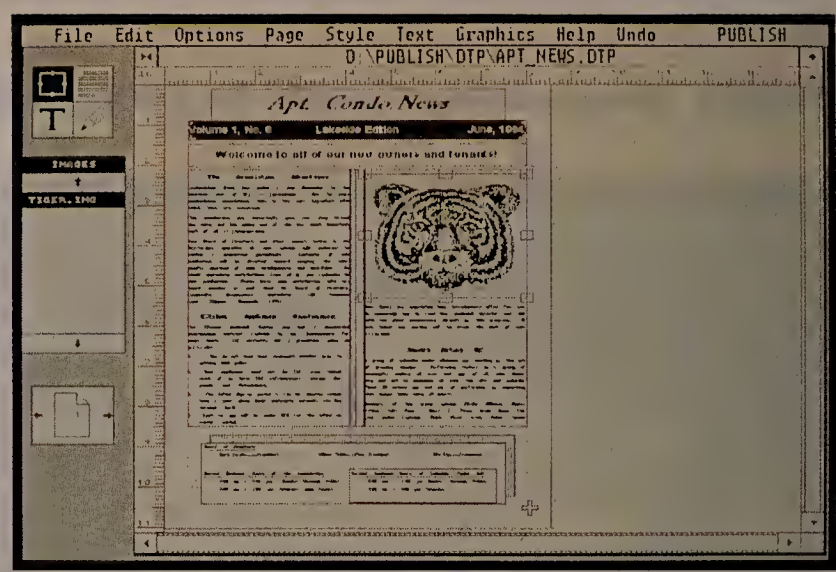
Budget Publisher Gains Power

Version 2.0 of *Publish It* brings the wunderkind of under-$300 desktop publishers ever closer to the power and finesse of top-of-the-line programs. Heading the list of enhancements in this major upgrade are better memory management, improved text-flow features, and the addition of soft fonts.

While it still runs in 640K of memory, *Publish It* also takes advantage of extended and expanded memory to speed screen refresh and prevent the occasional crash that previously plagued the program when you were working on longer documents. The new version also makes controlling text flow a lot easier. No longer must you estimate the number of pages you're adding to a document; the program does it for you. Nor do you have to create multiple, overlapping frames in order to wrap text around a graphic; now the deed can be done with a single, easily adjusted frame.

Version 2.0 retains the $249.95 price and clean *GEM* interface as well as efficient *Ventura*-like handling of graphic frames and paragraph tagging. *Publish It* has rectified its glaring shortage of fonts by adding Bitstream's *Fontware* with a handful of the most popular bit-mapped soft fonts. Other enhancements include custom page-sizing, a draft printing mode, automatic file backup, and frame grouping.

Publish It still suffers from modest kerning capabilities and the lack of vertical justification. The program will allow you to kern any two highlighted letters. That's handy for headlines, but *Publish It* can't handle body text as ably, since there's no automatic kerning, no table kerning, no line kerning. *Publish It* isn't yet the match of *Ventura* or *PageMaker*, but it's getting closer. —*Patrick Marshall*



Better memory management, improved text flow, and soft fonts move this budget publisher into the neighborhood of standards such as PageMaker.

IN BRIEF

Publish It
This midpriced desktop publisher gains extended/expanded memory support and better handling of text and fonts.

Timeworks
625 Academy Dr.
Northbrook, IL 60062
800/323-7744,
708/559-1399 (fax)
Reader service no. 643

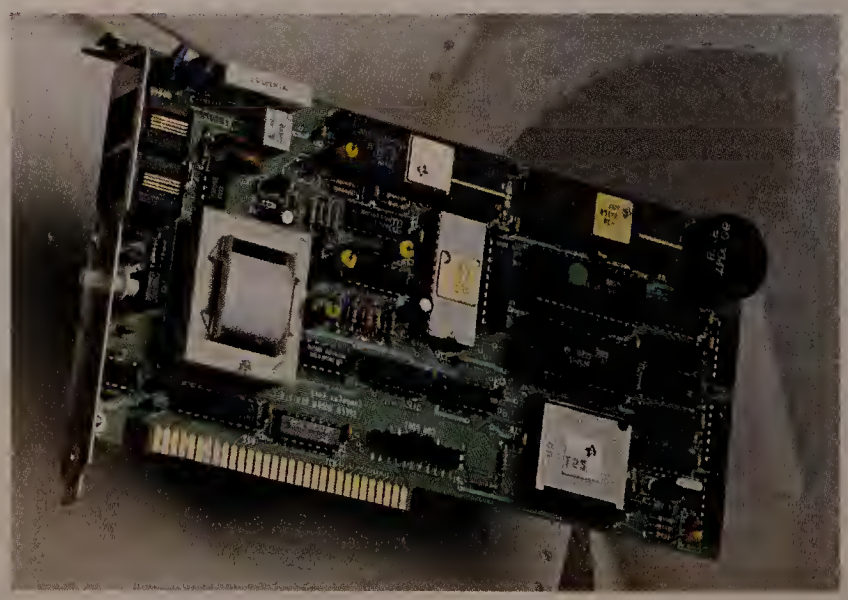
SpeedModem Champ

9600-Baud Budget

It's a big jump from the $400-plus street price for most low-end 9600-baud modems to the $149 price tag on CompuCom's SpeedModem Champ. Before you leap, you should know that CompuCom managed that price by omitting V.32 compatibility. That means the Champ can communicate at 9600 baud only with another Champ.

That restriction isn't necessarily as limiting as it sounds. What makes V.32 modems so costly is echo canceling, which lets you upload and download files simultaneously at 9600 baud. But most 9600-baud modems are used by corporations communicating between different offices. Your company can buy multiple Champs and send and receive messages sequentially at 9600 baud—or, as CompuCom claims, at up to 38.4 kilobaud effective throughput using its proprietary data-compression/error-checking protocol. The Champ also can dial up other brands of 9600-baud modems at speeds up to 4800 baud using the MNP-5 protocol.

The Champ will do the rest of its job about as well as the costlier V.32 modems. It's a true 9600-baud modem with hard-wired speeds of 300 to 9600 baud, not just the 9600-baud effective throughput boasted by some 2400-baud modems using the V.42bis protocol. At worst, you get a competitively priced MNP-5 modem. At best, the Champ is a 9600-baud modem that trades industry-standard V.32 compatibility for a low price and decent function. —*Mark Henricks*



At worst a fairly priced 2400-baud modem, this speedster can save you big bucks at 9600 baud if you're willing to forgo V.32 error correction and transmit only to other SpeedModem Champs.

IN BRIEF

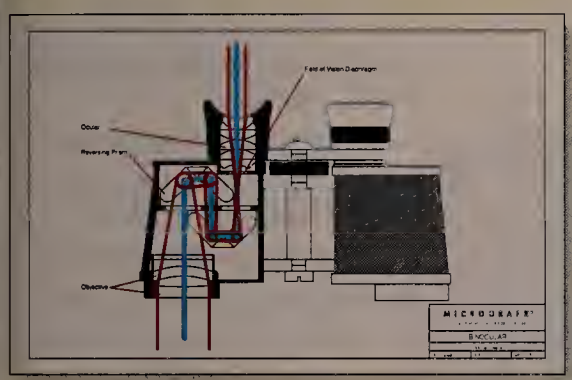
SpeedModem Champ
This budget modem sacrifices V.32 error checking at 9600 baud for a rock-bottom price.

CompuCom Corp.
1180-J Miraloma Way
Sunnyvale, CA 94086
800/228-6648,
408/732-4500
408/732-4570 (fax)
Reader service no. 645

Focus on Precision Illustration With New Designer 3.1

Free hands-on trial

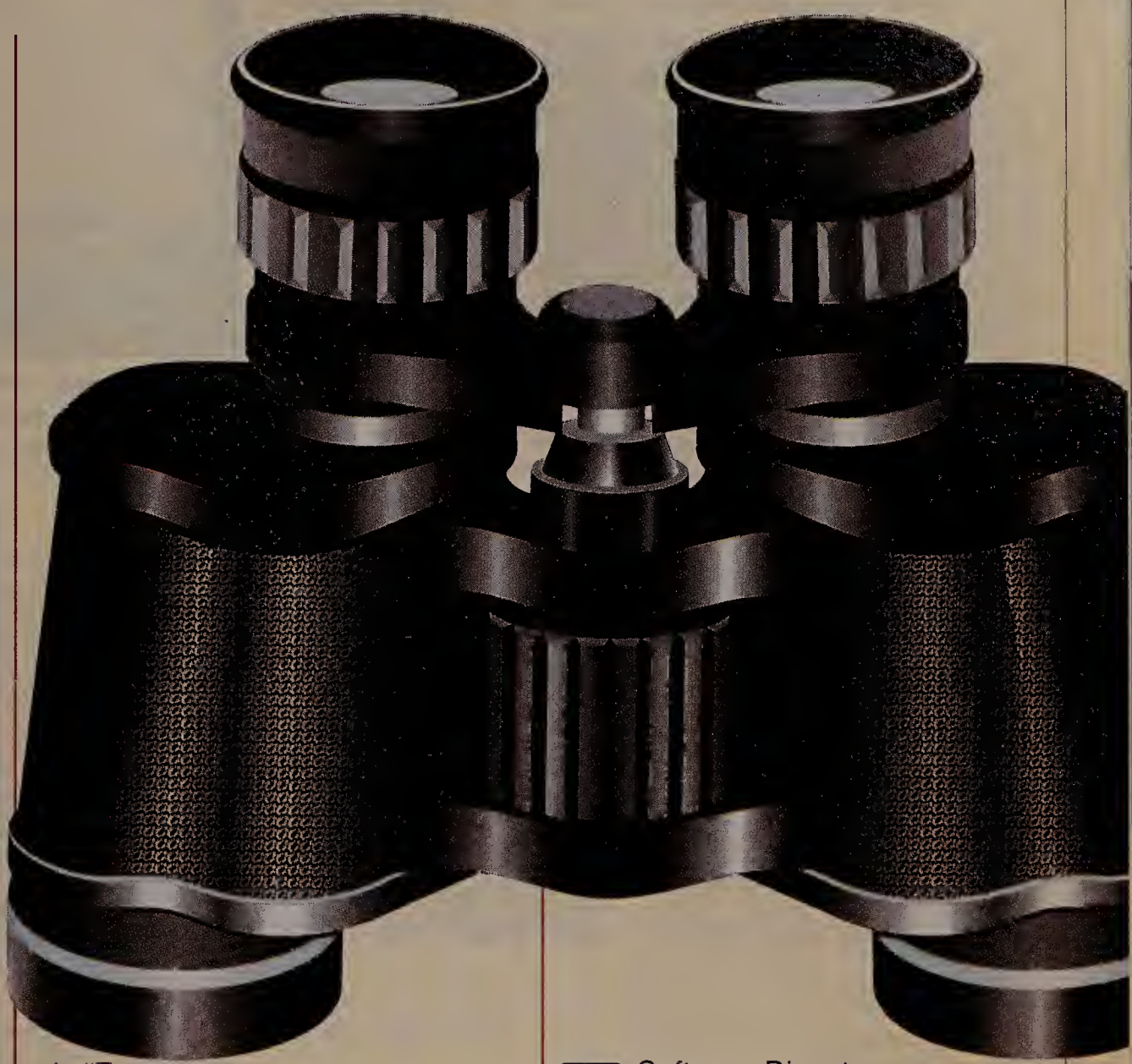
See for yourself. New Designer 3.1 turns your PC into a precision illustration tool, running under the Microsoft® Windows™ environment. You'll get more accuracy in technical illustrations, greater performance in graphic designs and higher speed in desktop publishing layouts. It's now easier to turn what you can imagine into an image all can see. Call for your free trial software and feel the high performance yourself.



▲ *Higher performance in Designer 3.1 speeds up drawings with faster wide styled lines–even wide dashed lines. Object snap points make precision a given.*

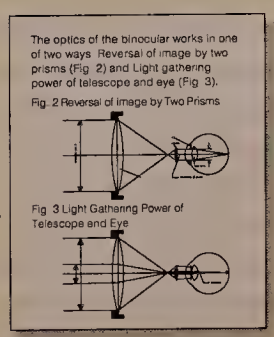
The view from out front. With new Designer 3.1 you're ahead of the pack no matter how you look at it. With more usable features, higher performance operation and more flexible file handling, you'll be able to create and manipulate an image until it's just right. That's precision.

▲ *Choose from 16.4 million colors and save any number of custom palettes for later use. Combine text and graphics with bitmapped images and true layering.*



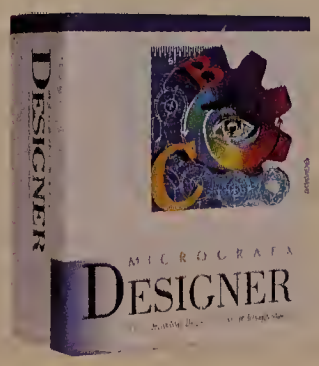
▲ *"The power-users choice . . . a customizable toolbox has a tool for just about anything; precise and accurate autotracing utility, CAD-like layering and superb color-publishing capabilities," says PC Magazine.*

▶ *Desktop published articles become clearer with precision illustration from Designer 3.1. Multiple file formats speed up import and export of files.*



Outside perspective reflects well. "Designer is an outstanding illustration package that receives Editor's Choice recognition. Designer is perhaps the most sophisticated of all the illustration packages," writes *PC Magazine*.

Software Digest reports that "Designer provides the best overall graphics package. The program offers state-of-the-art features, good performance, and unmatched ease of learning and use in a sophisticated package. Designer can handle virtually any free-form graphics or design task with ease." Designer was awarded a top-of-the-class rating.



Free hands-on trial. Call now, for a free working model of the new Designer, 800-733-3729, ext. 5050.

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Circle 179 on reader service card

ProKey for Windows

Keyboard Shortcuts Made Simple

Windows's built-in Recorder accessory for creating macros is easy to use, but it won't let you edit them. Longtime macro specialist RoseSoft has a better answer: a serious macro programming tool that remains simple enough for nonprogrammers.

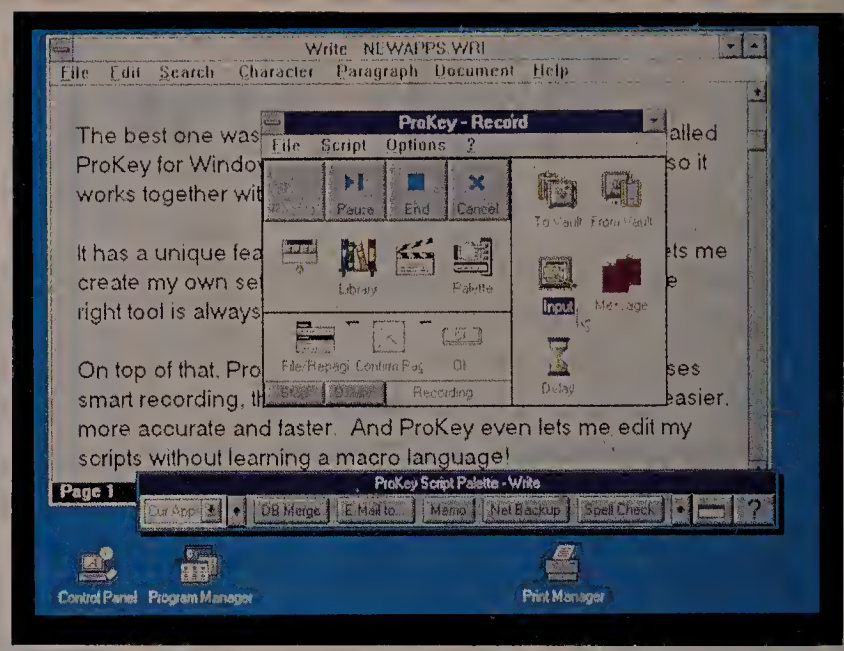
Unlike Recorder, *ProKey for Windows* records your mouse and keyboard actions intelligently, focusing not just on keystrokes but on outcomes. For example, if you drag a window, *ProKey* asks what you want to record—the distance dragged or the final window position. Consequently, *ProKey* scripts are device independent; a procedure recorded at one screen resolution will work at another resolution. And if you tell it to do so, *ProKey* will drop the intelligent mode in favor of a literal record of your keystrokes.

You can play back scripts in three ways: by pressing a keyboard shortcut, by selecting a macro from the Run dialog box, or by choosing a 3-D button in *ProKey*'s scrollable Script Palette.

ProKey surpasses Recorder with handy features such as on-screen messages, prompts, and pauses. In addition, *ProKey* has "vaults," which act as multiple clipboards. And *ProKey* ships with a number of handy sample scripts to get you started.

No macro recorder frees you completely from the chore of debugging. But *ProKey* makes the task as simple as possible by letting you edit just the portion of the macro you want to change. Although *ProKey* permits repetitive loops and nesting, it lacks if-then conditionals and does not have the ability to generate dialog boxes. Nor will you find an auto-execute feature for unattended operation.

More ambitious users should move on to batch languages such as PubTech's *BatchWorks* or SoftBridge's *Bridge Batch*. But at $99 ($60 for registered owners of the DOS version), *ProKey* is an inexpensive way for beginners to save steps and be more productive right away. —*Scott Dunn and Jesse Berst*



ProKey for Windows' "intelligent" macro recorder/editor focuses on the outcomes you want, not just keystrokes, so even mouse actions come out correctly on any resolution display.

IN BRIEF

ProKey for Windows
WINDOWS A step up from Recorder, *ProKey* offers intelligent macro recording and editable scripts that help you navigate *Windows* quickly.
RoseSoft, Inc.
P.O. Box 70337
Bellevue, WA 98007
206/562-0225,
206/562-9846 (fax)
Reader service no. 647

RSE Variety Pak

Shareware Utilities on the Cheap

Ever feel short-sheeted on DOS functionality—that some features ought to be part of base code but aren't? The *RSE Variety Pak* fills those gaps while skimming a barely noticeable $10 from your wallet.

Variety Pak is no misnomer: These utilities do everything from making your screen easier to read, to capturing screen shots, to making a file directory.

Each of the programs in this shareware ten-pack was previously offered separately for between $10 and $35, but you can have the complete set with a printed manual for $10 or with a manual on disk for $5. The utilities make small demands on your system—all ten of them fit into only 360K on your hard disk.

For laptop—and desktop—users, the memory-resident *BriteLine* highlights the line your cursor is on. You can turn *BriteLine* on or off at any time within your application.

PC-Images lets you capture a number of screens and group them into a carousel to run as an impromptu business presentation. With only a minor change to its configuration, *PC-Images* will capture images in both *Windows* and non-*Windows* programs.

PC-Directory is an extended-file-name manager that will run as a stand-alone or memory-resident program. You can attach a note of up to 160 characters to any file name, create a tree directory, and list files by attributes. You are also able to search for a file by attributes or a string of text as well as view and rename files.

You also get six other packages whose names suggest their functions: *Trash-It, Playback, PC-FileNotes, Nabbit, Remind Me,* and *Hide It.* All are activated by preselected hot keys, which are reconfigurable if they conflict with control keys used by another application. Finally, when it's time for you to forget about business for a while, *Variety Pak's* Conjecture treats up to four players to a round of spinning wheels, guessing letters, and solving word puzzles. —*Cathy Smith*

IN BRIEF

RSE Variety Pak
WINDOWS This easy-on-the-wallet shareware sampler keeps your data limber by giving you features you wish DOS provided.
RSE Shareware
1157 57th Dr. SE
Auburn, WA 98002
206/939-4105
Reader service 653

DUE TO THE STRONG GRAPHIC CONTENT OF THIS PROGRAM, USER DISCRETION IS ADVISED.

We don't want to infringe on anyone's freedom of expression. But Charisma gives you so many graphic possibilities in one powerful, Windows-compatible program, we felt a warning was necessary.

Limit the number of fonts used to no more than two per presentation. Be consistent and use underlines, italics or bold type for emphasis.

Once you try it, you'll understand why. Charisma's extensive word and data charting functions, real drawing capabilities and total user control make it the most complete graphics solution for business. Unfortunately, some people have trouble resisting the temptation to use every Charisma feature on every presentation. That's understandable. When you have access to 16.8 million colors, more than 40 fully editable fonts, thirteen drawing tools, a library of 2200 clip art images and the ability to turn any graphic element into a bullet, it's easy to get a little too enthusiastic.

It's just as easy to get overly excited about the way Charisma lets you assemble entire presentations without switching between word processing, graphics and spreadsheet programs. Plus you see the results of your creativity immediately, since Charisma doesn't make you go back and forth between text and graphic screens. And with more than 30 import and export filters for graphic formats—including Harvard Graphics—Charisma gives you more power and control than ever before.

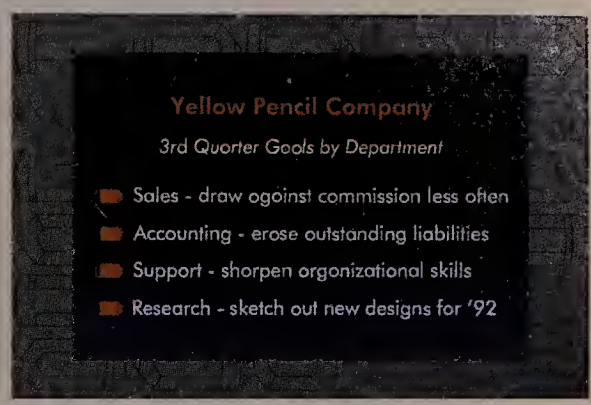
But you shouldn't expect any less from a program designed specifically to take full advantage of the Windows environment. Now, even without overdoing it, you can output the most provocative business graphics you've ever seen to 35mm slides, overheads and handouts. Or make your point with SlideShow, Charisma's on-screen graphics presentation utility that includes dozens of transition effects.

Its strong graphic content prompted *InfoWorld*'s Michael J. Miller to say, "Charisma offers the greatest flexibility in creating and editing charts that I've seen."

We think you'll agree.

Call 1-800-733-3729, ext. 5050 (3710 in Canada) for your free working model of Charisma 2.1*.

Add visual interest and keep audience attention focused with freeform illustrations or custom edited clip art. One graphic per chart works best.



As you lay out word charts, use a template that provides maximum readability. Add spark to presentations by turning any graphic element, even your company logo, into a bullet.

Break out information logically and understandably with a variety of chart types. Then use the Harmony Palette for a unifying blend of just the right colors.

8 0 0 - 7 3 3 - 3 7 2 9

*Allow 4-6 weeks for delivery. Micrografx, Inc. 1303 Arapaho, Richardson TX 75081 • (214) 234-1769 (customers outside North America please dial extension 3710). Micrografx has offices in Los Angeles, Paris, London, Munich, Sydney and Copenhagen.

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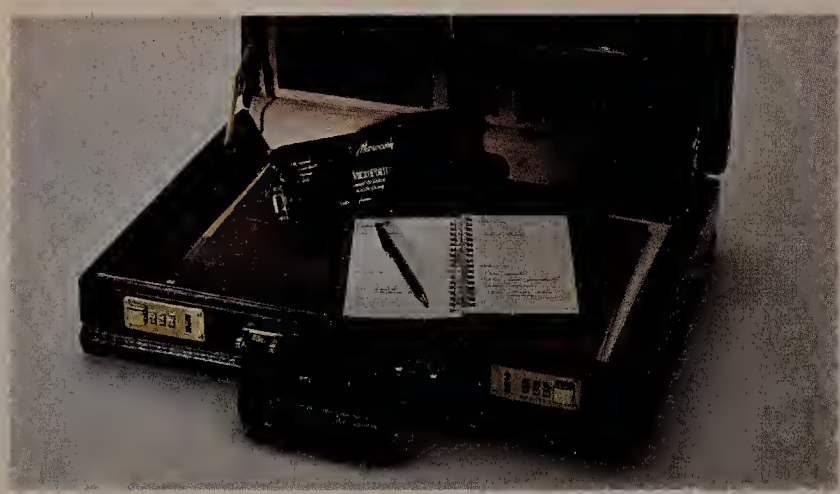
Circle 183 on reader service card

MicroPorte 1042

A Pocketful of Modem Offers Speed and Accuracy



Microcom's high-end modem won't force you to give up speed or data integrity for pocket-sized convenience.

Portability is the rage, and powerful laptops have truly become the offices of many salespeople, accountants, and other traveling professionals. Some can get by with inexpensive modems for phoning the office—but if the data you send is critical, you don't want to leave data compression and error correction behind.

Microcom's 7-ounce MicroPorte 1042 is the size of an index card—light and small enough to carry in a pocket but powerful enough to complete data calls to headquarters or your E-mail service with high speed and accuracy.

Nominally a 2400-baud modem, the $649 MicroPorte 1042 achieves a top speed of 12,000-baud effective throughput via an unusual combination of hardware and software speed boosters. The MicroPorte starts by switching 2400 baud into 4000 baud with a Turbo Mode chip set. Under ideal circumstances, the effective throughput can then be tripled to 12,000 baud via the V.42bis data compression/error checking protocol. For cutting through really noisy land and cellular telephone lines, Microcom includes the MNP-10 error correction protocol it introduced a year ago. The company claims effective throughput of 8000 baud to other MNP-10 modems even on the noisiest cellular lines.

The modem ships with cables, software, and a copy of *Carbon Copy Plus*, Microcom's remote-control/file-transfer program—which you can also use on your desktop PC back at the office. To safeguard your confidential data, the 1042 has password security. It is powered by AC or its own 2-hour batteries, so you won't have to rely on an already stressed-out laptop power source; a recharger is included. —*Mark Henricks*

IN BRIEF

MicroPorte 1042
This pocket-sized modem gives you high speed and data integrity on the road.
Microcom Inc.
500 River Ridge Dr.
Norwood, MA 02062
800/822-8224,
617/551-1006 (fax)
Reader service no. 641

Network H.Q.

LAN Hardware and Software Inventory

When you're thinking about upgrades, do you ever wish you could wave a magic wand and get a list of all the hardware and software on every PC in your office?

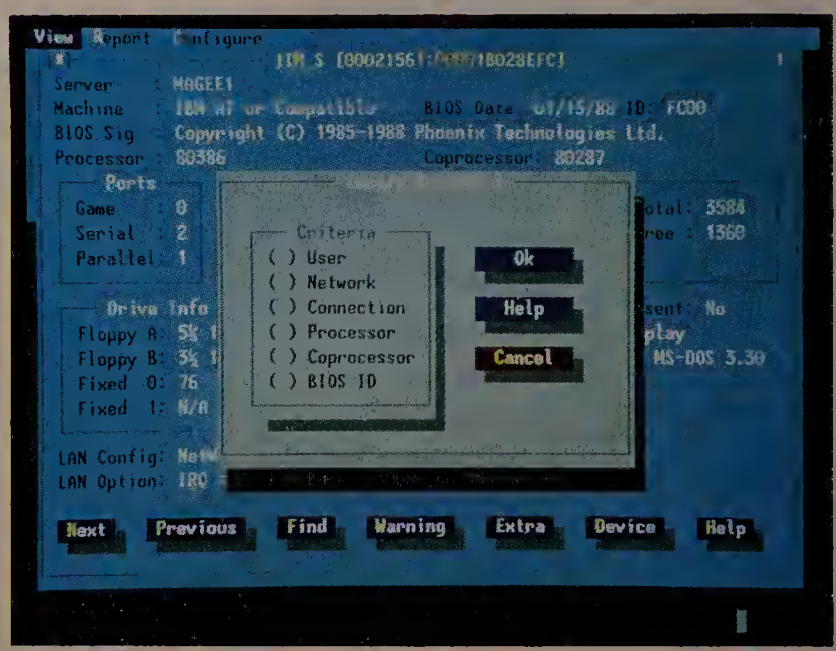
It's not magic, but *Network H.Q.* solves this annoying problem. Items tracked include processor and coprocessor type, BIOS information, amount and configuration of memory, kind of video board, versions of DOS and NetWare, LAN adapter configuration, and more.

After installing *Network H.Q.* on your NetWare server, you just add a line to your network log-in script so every workstation runs a special inventory utility each time it logs on to the network. This inventory utility checks the workstation's hardware and software and saves the information to a central data base. You then can browse through the data and print out custom reports. You can also import the data into your favorite DBMS or spreadsheet for further massaging.

Perhaps *Network H.Q.*'s most useful feature is its "warning system." It will check workstations for specified problems—low amount of free memory or disk space, changes to network drivers, missing hardware, and so on. Any problems detected are logged to a special file, which the supervisor can then check daily for signs of trouble. *Network H.Q.* costs $395 per server and requires NetWare 2.15 or a later version. —*Robert Lauriston*

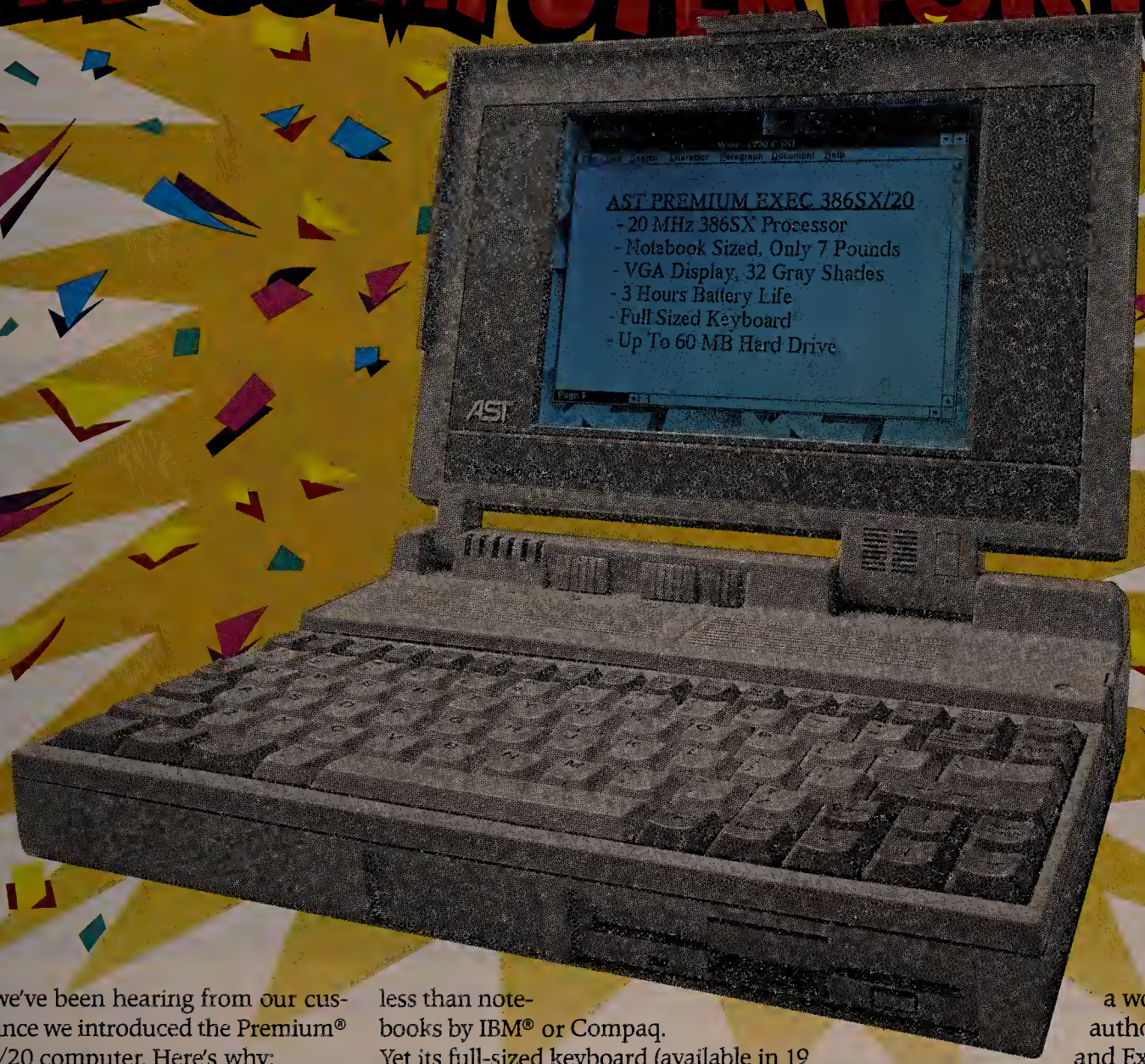
IN BRIEF

Network H.Q.
This LAN-management utility shortens the time needed to upgrade hardware and software.
Magee Enterprises
P.O. Box 1587
Norcross, GA 30079
800/662-4330,
404/368-0719 (fax)
Reader service no. 651



No more visits to every workstation on a LAN to determine your hardware/software inventory—just check the Network H.Q. data base.

WOW! ASTs THE COMPUTER FOR ME!



That's what we've been hearing from our customers ever since we introduced the Premium® Exec™ 386SX/20 computer. Here's why:

"The excellence of the screen makes this a definite winner."[1] The Premium Exec's VGA display achieves superiority by using 32 levels of gray. Compaq® and Toshiba® only use 16.

How about size? The Premium Exec weighs less than notebooks by IBM® or Compaq. Yet its full-sized keyboard (available in 19 language versions) won't cramp your style.

Since your time is valuable, the Premium Exec gives you over three hours of battery life. "AST has done an excellent job of implementing power-saving features in its notebook."[2]

Plus, AST provides software to keep you going: MS-DOS,® Laplink™ III and Battery Watch.™ Toshiba simply includes DOS and others give you no software at all. And our full array of options such as FAX modems, numeric keypads and spare battery packs will further increase your productivity.

As for service, nobody does it better. Premium Exec owners can rely on free comprehensive direct support programs, a worldwide network of authorized service centers and ExeCare,™ an optional program guaranteeing you service or replacement within 24 hours.

Even with its powerful 386SX processor and 20 MHz speed, the Premium Exec is still priced $400-$3000 less than Toshiba, Compaq and IBM. "AST has succeeded in delivering SX power and portability at desktop prices. Can you ask for anything more?"[3]

For more information call **1-800-876-4AST.**

AST: The Clear Choice!

	AST Premium Exec 386SX/20	Compaq LTE 386s/20	Toshiba T2000SX	IBM PS/2 L40 SX
Display/Gray Shades	VGA/32	VGA/16	VGA/16	VGA/32
Hard Drive (Models)	20/40/60 MB	30/60 MB	20/40 MB	60 MB
CPU Speed	20 MHz	20 MHz	16 MHz	20 MHz
Weight (lbs.)	7	7.5	6.9	7.7
Price*	$2995	$4399	$3399	$5995

*U.S. Suggested retail prices, 6-14-91

Footnotes: 1 – Government Computer News, April 1, 1991. 2 – PC Sources, June 1991. 3 – PC User (United Kingdom), April 9, 1991. AST markets products worldwide; outside of the United States and Canada call AST International on (714) 727-9292 or fax to (714) 727-9360. AST, AST logo and Premium registered, Exec and ExeCare trademarks AST Research, Inc. All other brand and product names are trademarks or registered trademarks of their respective companies. Copyright © 1991 AST Research, Inc. All rights reserved.

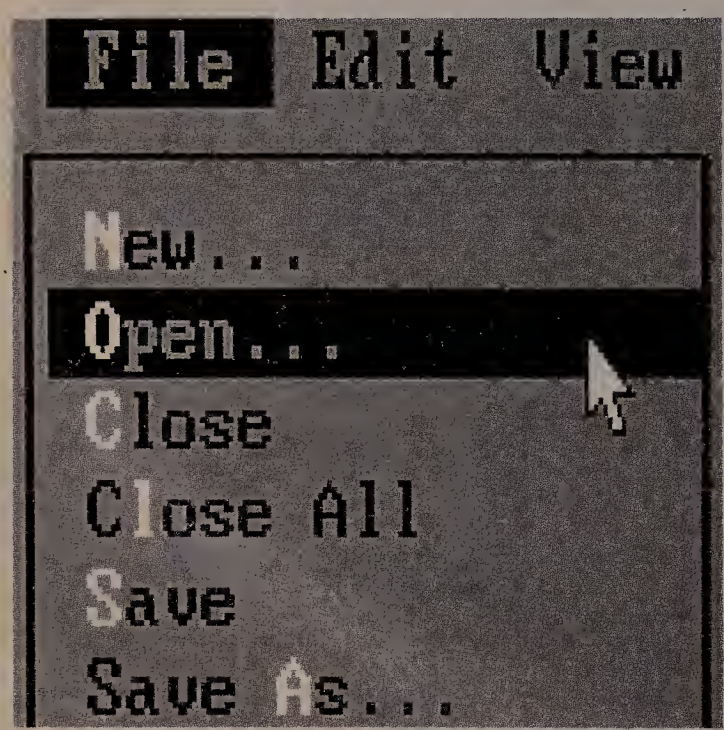
AST® COMPUTER

The Power Of Choice. To Go.

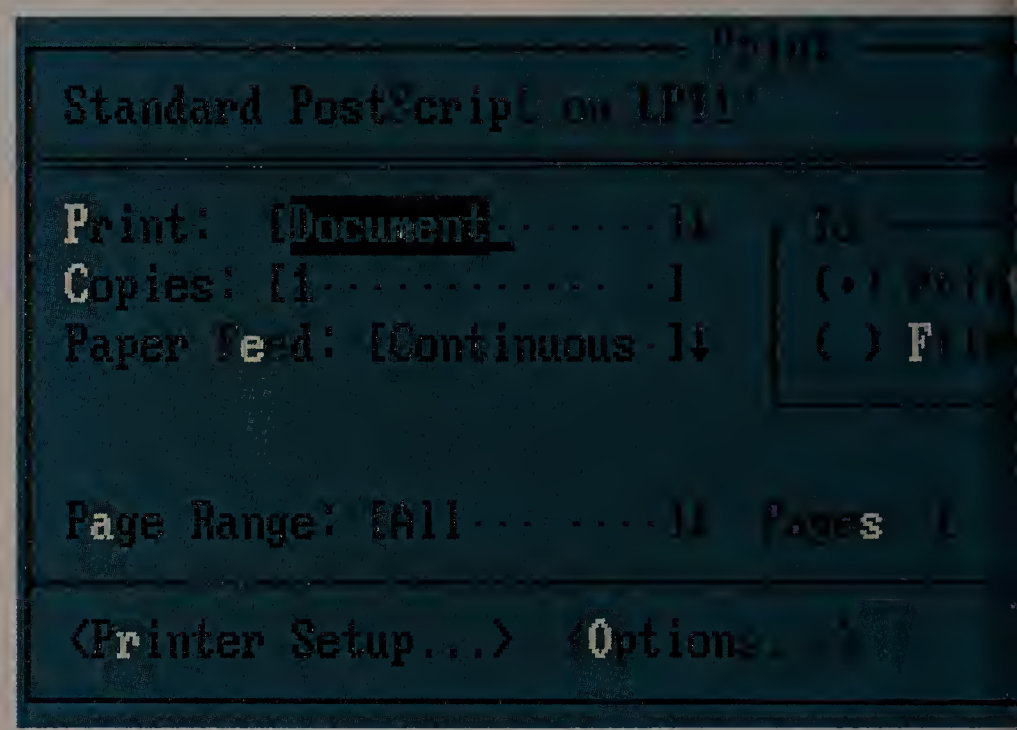
Circle 10 on reader service card

Why the be
processor is r

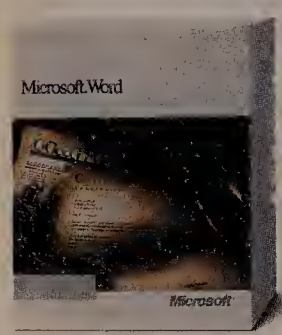
Gone is the seemingly endless string of keystrokes to format. Make headings bold and subheadings italic. Make text flush left or flush right. All it takes is a point and click.



With Word, virtually any and every command imaginable can be accessed directly from the menu. So it's bye-bye keystrokes.



Word 5.5 is so intuitive it questions you, so you don't have to question the manual. Word comes complete with dialog boxes that prompt you for specific parameters and other vital info.



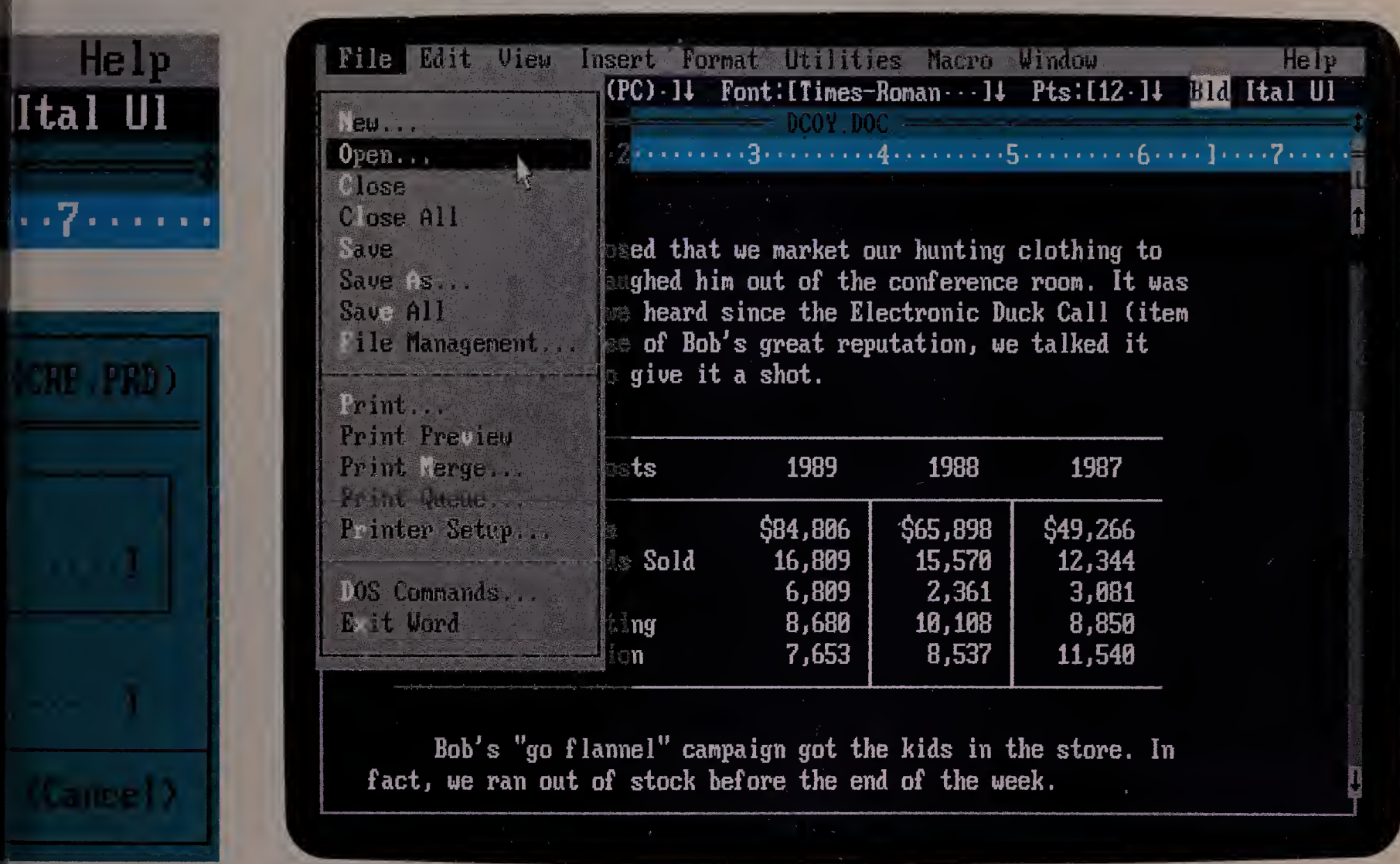
Microsoft® Word 5.5 is so incredibly easy to learn and use, a lot of people may find it very difficult to believe it's a character-based word processor.

You see, the Word interface is remarkably similar to those found in today's intuitive, Windows™-based software packages.

What's even more remarkable is what it'll do for you. With Word you can easily learn and access a host of incredibly powerful features via pull-down menus and dialog boxes. Things like point-and-click for-

*As used herein "DOS" refers to MS-DOS or PC-DOS operating systems. © 1991 Microsoft Corporation. All rights reserved. Printed in the U.S.A. Inside the 50 United States, call (800) 541-1261, Dept R89; outsi
One free Working Model per person. Offer good only in the 50 United States and while supplies last.

t DOS word
othing like one.



Word 5.5 gives you the types of benefits you'd expect to find in a Windows-based word processor. Not a DOS one. Do things like easily mix text, numbers and graphics between several open documents.*

matting, style sheets, print preview and mail merge. Things that save time. Not to mention frustration.

Perhaps best of all, it'll run on almost any PC in your office. All you need is a modest 384K in RAM and two floppy drives.

For a free Working Model or the name of a dealer near you, call (800) 541-1261, Department R89.

And see why no other character-based word processor even comes close to Word 5.5.

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- SCSI interface supports up to seven external hard drives of unlimited capacity
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Since 1987, QMS® ColorScript™ 100 printers have produced over 20 Million hard copies and transparencies around the world! And because the color technology is engineered to use new ink with each print, the last page literally looks as bright and true as the first. Reliable QMS technology unites with the industry standards of Adobe PostScript and PANTONE®* Color to put exciting persuasive color at your fingertips page after page.

Presenting The *NEW* QMS ColorScript 100 Model 10*p* Printer

If it's dynamic presentations you're after, you need the Model 10*p*. From business presentations to training programs, the Model 10*p* delivers vibrant, visually exciting colors that help you communicate ideas clearly. QMS screen angling technology and special presentation inks make these unusually captivating colors possible. And it's a proven fact that color presentations increase audience information retention and raise a recipient's tendency to act upon the information. So, in today's competitive business environment, the key question becomes, "Can we afford *not* to have the power of color?"

The QMS ColorScript 100 Model 30*i* Printer, Strictly For The Image Conscious

Extremely low cost Pantone-approved proofs in about 60 seconds. If you're a graphic designer, commercial artist or publisher it's easy to see how the Model 30*i* is revolutionizing your business. The Model 30*i* is changing the relationship between speed, quality and cost by allowing you to do your job faster, cheaper *and* better!

The Model 30*i* is the first true "what-you-see-is-what-you-get" color printer. The colors you see on a Pantone-approved monitor are the same colors you'll see on a Model 30*i* proof *and* the same colors you'll see on the finished, printed piece. Standard 11" x 17"/A3 paper handling capacity allows you to design actual size 8 1/2" x 11" full bleed proofs with crop marks.

All QMS ColorScript 100 printers ship with AppleTalk, parallel and serial interfaces to accommodate quick, easy set-up in the most popular host environments.

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1-800-523-2696 EXT. 79

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QMS ColorScript 100 Models 10 and 30*i* shown.

Circle 202 on reader service card.

UPDATE

New Versions of Your Favorite Products

DataPerfect 2.2

New macros in version 2.2 help you exchange data with other WordPerfect products.

Version 2.2 of *DataPerfect* includes new macros to help you exchange data with the *WordPerfect Office* Notebook and merge *DataPerfect* records into *WordPerfect* documents. A new indexing system improves network performance, and the added *WordPerfect Office Shell* improves integration with other products in the line. Version 2.2 retails for $495, upgrades from previous versions are $89. WordPerfect Corp., 1555 N. Technology Way, Orem, UT, 84057; 800/451-5151, 801/222-5077 (fax).

Reader service no. 654

PC-Kwik Power Disk 1.1

Version 1.1 of *PC-Kwik Power Disk* makes it easier for you to test and defragment your hard disk by using a mouse to rearrange your files' physical locations. You can select a cluster from a map of your hard disk and view its file in ASCII or hex format. You can sort directories and files by name, extension, date and time, or size so they'll come up on screen in a convenient order. The $79.95 product is available to current *Power Disk* users for $19.95 and to users of other Multisoft programs for $39.95. Multisoft Corp., 15100 S.W. Koll Pkwy., Ste. L, Beaverton, OR 97006; 800/759-5945, 503/646-8267 (fax).

Reader service no. 655

BeckerTools V2 Plus

WINDOWS *BeckerTools*, the *Windows* file manager for people who like lots of icons, becomes a utilities collection with the addition of backup, file recovery, and defragmenting programs. The three new modules in *BeckerTools V2 Plus* can run as stand-alone *Windows* programs or as part of the file manager. You can multitask the backup and recovery programs under *Windows*, but you must close all *Windows* applications before defragging your hard disk. Data loss can result from writing to a disk while files are being physically moved. *BeckerTools V2 Plus* lists for $129.95; the upgrade from version V2 is free. Abacus, 5370 52 St. SE, Grand Rapids, MI 49512; 800/451-4319, 616/698-0325 (fax).

Reader service no. 656

16/4 Pocket Token Ring Adapter

A 16-Mbps Token Ring addition extends Xircom's family of pocket-sized adapters that give laptops entrée to ethernet, Arcnet, and token ring LANs. The LAN adapter plugs into your PC's parallel port, and, as with all Xircom adapters, is used instead of an internal LAN board. The new version is software switchable between 4 and 16 Mbps. Its SmartRing software takes 17K, rather than 40K, worth of portable memory. The 16/4 Pocket Token Ring Adapter costs $895. Users of the older 4-Mbps adapter can upgrade to *SmartRing* software for $75. Xircom, 26025 Mureau Rd., Calabasas, CA 91302; 800/874-7875, 818/878-7630 (fax).

Reader service no. 658

Solomon III Version 7.0

Version 7.0 of the Solomon III high-end accounting series increases integration between modules, amount of historical data retained, and types of financial reports available. New tools let you move among modules more easily, and you'll find new ties between modules that are often used in tandem, such as Accounts Payable and Purchasing. The per-module price for DOS and NetWare versions is $795. A ten-module Solomon III Equity Pack is $2995. Solomon Software, 1218 Commerce Pkwy., Findlay, OH 45839; 800/879-2767, 419/424-3400 (fax).

Reader service no. 659

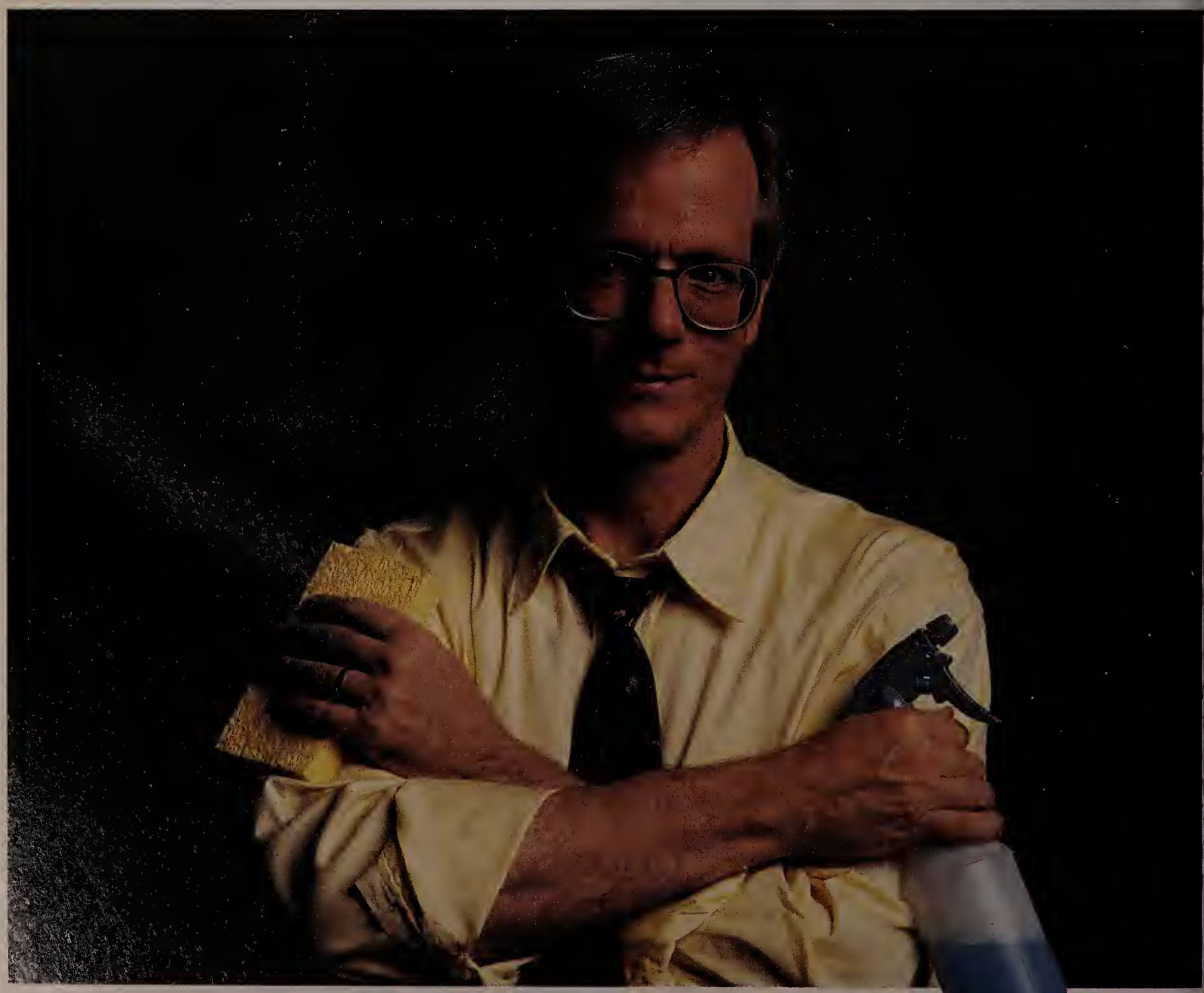
Superbase 4 version 1.3, Superbase SQL Library

WINDOWS Version 1.3 of *Superbase 4* has added SQL support through a collection of *Windows* DLLs called the *Superbase SQL Library*. The upgrade also offers more programmability, better network support, and faster execution of queries. The *Superbase SQL Library* can simultaneously address multiple SQL servers using different SQL dialects, including Microsoft's *SQL Server*. The *Library* lets you design a report that can recognize and retrieve data directly from a SQL server—a capability the standard *Superbase* report writer doesn't provide. Version 1.3 retails for $695, *Superbase SQL Library* for $495. Upgrades are $50. Precision Inc., 8404 Sterling St., Irving, TX 75063; 800/562-9909, 214/929-4888, 214/929-1655 (fax).

Reader service no. 660

For more information about any product, contact the manufacturer or circle the number on the reader service card.

INTRODUCING THE
EVER HAPPENED



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HE NORTON DESKTOP™ FOR WINDOWS.™

Now you can make Windows rform the way you've always nted—without changing the way u use it. For just $149,* The Norton sktop includes an impressive lection Peter rton's best ograms at make indows ore accesle and a hole lot sier to use.

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The Norton Desktop's enhanced e manager allows you to launch, py, move, view and delete a file or application by clicking and dragging icons on the desktop. You can also print documents by dragging files to any printer icon. In fact, our icon editor makes it easy to select any of the more than 150 icons provided, while The Norton Viewer enables you to instantly view files from over 30 Windows and DOS applications.

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Norton Backup

The Norton Desktop also provides the easiest UnErase™ ever, for stand-alone PCs *and* network systems, plus the industry's most powerful automatic disk diagnosis/repair.

UnErase

The program has a host of additional features, including a rich assortment of colorful screen savers, along with our SuperFind™ text searching, which enables you to search and find files quickly and easily on any disk drive—even on networks.

So if you're ready to improve your Windows, call **1-800-343-4714, Ext. 722W** for more information about The Norton Desktop. Or visit your nearest dealer and pick up a copy for yourself. It could be the best thing that ever happened to your PC.

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ggested retail price, USA only. **Also available separately for $129 (MSRP). © 1991 Symantec Corporation. All rights reserved. The Norton Desktop for dows is a trademark of Symantec Corporation. All other brand or product names mentioned are trademarks of their respective holders.

Circle 266 on reader service card

286 Notebooks: Traveling Light

Looking for a notebook computer with great portability and long battery life? As our tests show, a 286 notebook can run almost anything an SX notebook can—for a lot less.

Michael Goodwin and TJ Byers

It's time to buy a couple of laptops so department staffers can work productively on business trips, or maybe you're just in the market for a handy unit to take home on weekends. You know you want one of the hot new notebook machines, the ones that weigh less than 10 pounds including a hard disk and a built-in floppy drive.

But which kind? A 286 or a powerful 386SX?

High-end 386SX notebooks are perfect for power users with deep pockets and nearby AC plugs. The units are fast, run *Windows* in enhanced mode, and will handle any software that comes along. But SXs have two Achilles' heels: short battery life and high prices.

Notebooks built around the 286 make more sense for budget-conscious globe-trotters who need to work long hours on portable power. These units are a bit slower, and they may lock you out of 386-specific applications—but they keep on cooking away from the power plug and can save you big bucks in the bargain.

The battery advantage enjoyed by 286s is striking. For in-flight computing, 3 hours of battery life is the least you should expect from any notebook.

The 286s come with a price advantage as well. The average 286 notebook costs $500 to $1000 less than a comparable 386SX.

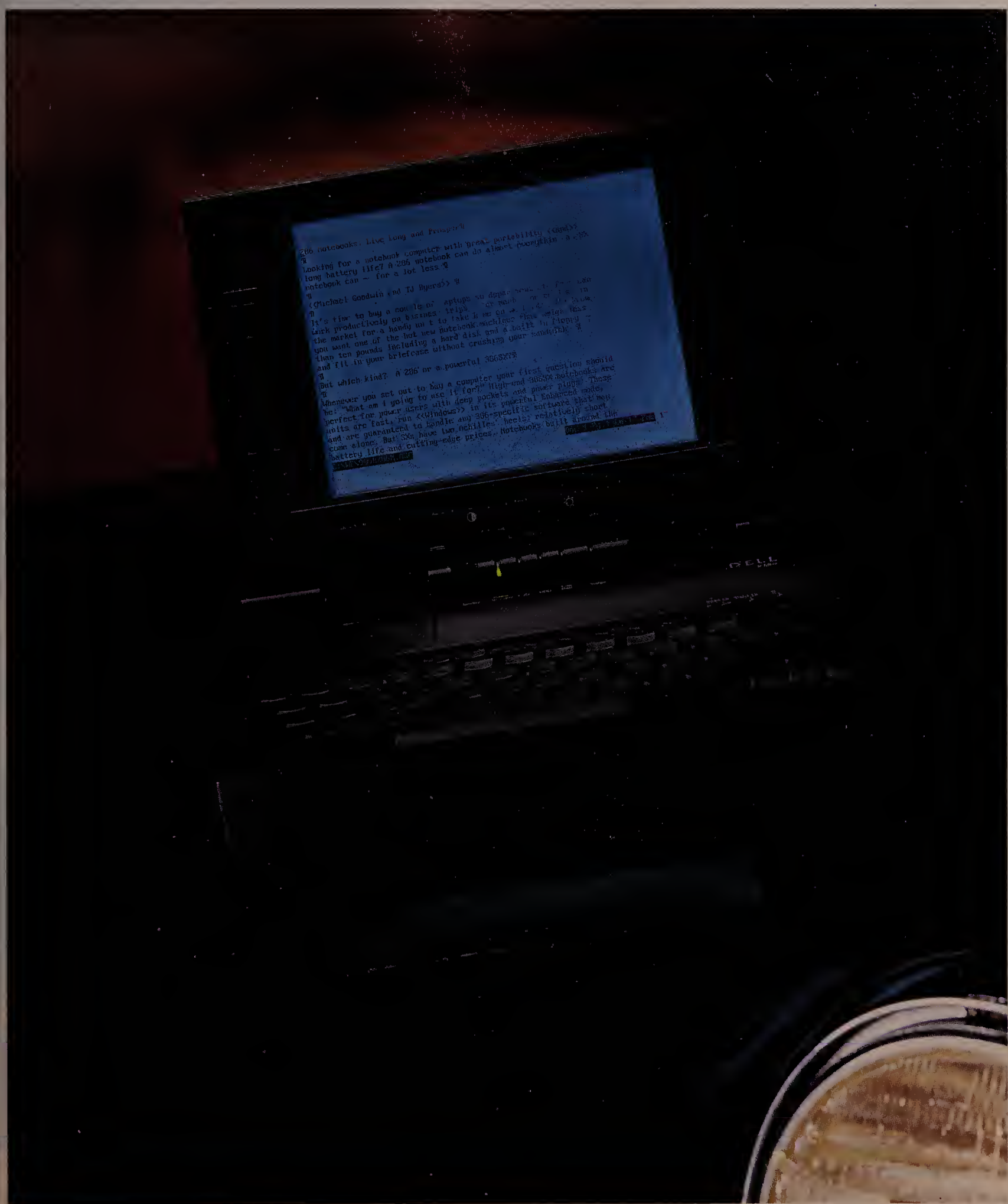
These 286 notebooks come in two clock speeds, 12 and 16 MHz. However, even the hot 16-MHz models can't match the performance of a 386SX. Still, if your PC roadwork is restricted to monofont word processing, a bit of after-dinner *1-2-3*, or logging on to office E-mail when you're out of town, a 12 MHz will do fine, while *Windows* runs surprisingly fast on a 16-MHz 286.

This roundup evaluates eight units: three look-alike 16-MHz screamers from Grid, Panasonic, and Tandy, plus five 12-MHz systems from Compaq, Dell, NEC, Toshiba, and Zeos. We set them up in a standard configuration: 2MB to 3MB RAM, a 20MB hard disk, a 1.44MB built-in floppy drive, a built-in 2400-baud modem, at least one parallel and one serial port, and DOS. Our weights are *traveling weights,* including the battery, the AC adapter/charger, and the modem. And all prices are *street* prices, to reflect what you'll really pay.

The winner? Dell's System 212N earns a Best Buy. If you're a speed-hound—and you can live with a brief 2 hours of battery life and a sky-high price—Grid's 16-MHz 1720 is a tempting, if expensive, second choice.

Even if business trips take you far from AC power, the coast is clear. Long battery life and affordable prices make the best of these featherweight workhorses the notebook buys of the year.

Michael Goodwin is an associate editor and TJ Byers a contributing editor for PC World.


286 notebooks: Live long and Prosper!
Looking for a notebook computer with great portability (and)
long battery life? A 286 notebook can do almost everythin a 386
notebook can — for a lot less.
(Michael Goodwin and TJ Byers)
It's time to buy a con ls or aptops so depac
work productively on bisines trips or
the market for a handy wo t to take h ne on
you want one of the hot new notebook machines
than ten pounds including a hard disk and a built in floppy
and fit in your briefcase without crushing your sandwich.
But which kind? A 286 or a powerful 386SX?
Whenever you set out to buy a computer your first question should
be: "What am I going to use it for?" High-end 386SX notebooks are
perfect for power users with deep pockets and power plugs. These
units are fast, run (Windows) in its powerful Enhanced mode,
and are guaranteed to handle any 386-specific software that may
come along. But SXs have two achilles' heels: relatively short
battery life and cutting-edge prices. Notebooks built around the

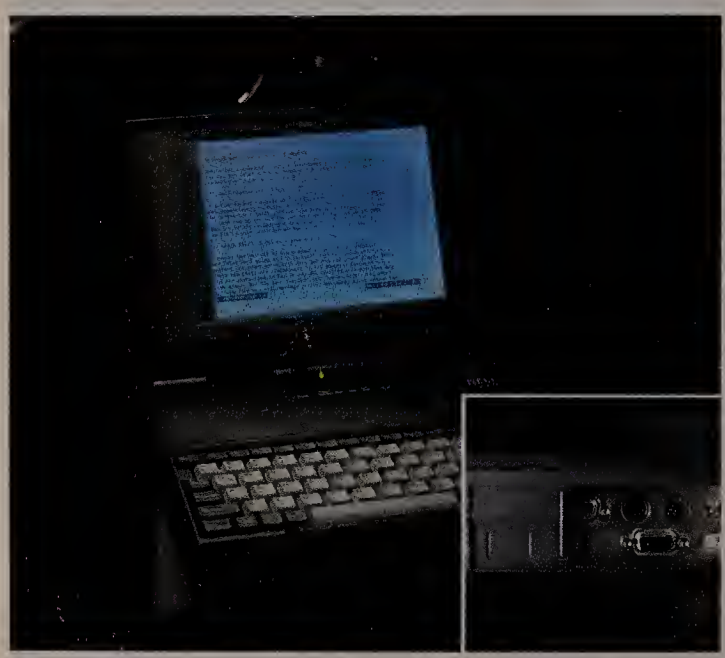
Compaq LTE/286

PROS: Small, longest battery life in roundup, affordable
CONS: Slow, heavy, small screen, long recharge, poor keyboard

Everyone hates to see a champion fall, but Compaq's 12-MHz LTE/286 (a World Class Award winner) is showing its age. True, its 4-hours-plus battery life is still the best, its dimensions are still the smallest, and its price ($2870) is quite reasonable. But the rest of the story is pretty grim: Its 2.6MB RAM capacity is cramped. Its CGA screen is the smallest in the roundup and so squat that circles become ellipses. Performance is poor, and its 9-hours-plus recharge time is unacceptable. The LTE's keyboard suffers from emulated page-control keys and a nonstandard cursor key layout that drives some people crazy.

Compaq's new tech support line is fast and accurate, but the company's lack of a guaranteed fast-replacement policy is unfortunate. All told, we can recommend the LTE/286 only for users who must have the longest battery life they can get.

Small size and long battery life are appealing, but the Compaq's tiny screen and poor performance are problems.



Dell's Best Buy combines terrific portability with a big, bright screen, a fine keyboard, and superior service and support.

Dell System 212N

PROS: Light, small, long battery life, great service and support
CONS: Text could be sharper

It's easy to see that Dell has put some thought into what makes a great notebook. This mid-priced, 12-MHz unit boasts excellent portability (both weight and size are close to the bottom of the scale) and delivers nearly 3.5 hours of battery life. The 212N is also the only system here to give you a built-in mouse port, and its sliding rear-panel port cover is a real convenience. The keyboard features dedicated page control keys and cursor keys in the standard inverted T. Moreover, the 212N has one of the largest screens in the roundup, although its black-on-white text could be a bit blacker.

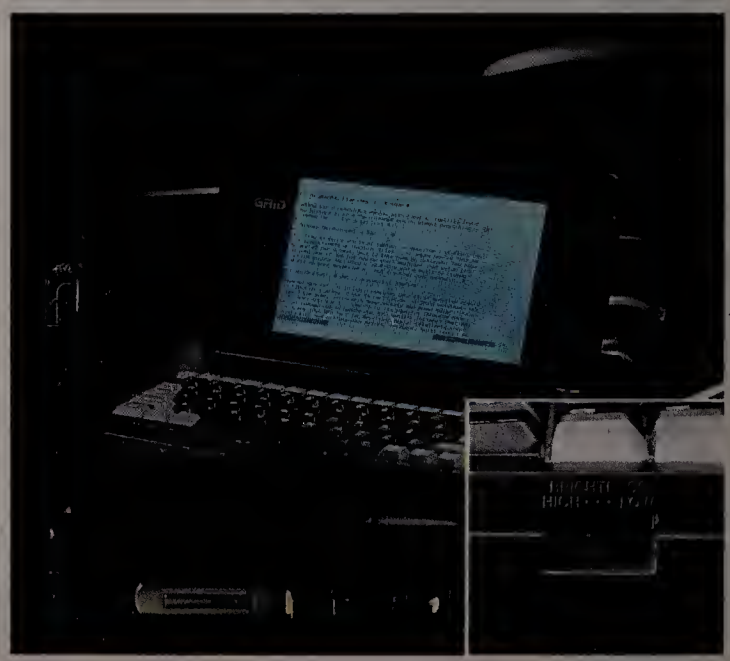
Service and support are absolutely top-notch, just as you would expect from Dell. And although its performance may not be the most dazzling, Dell's featherweight System 212N PC touches all the bases, and it earns its Best Buy with ease.

Grid 1720

PROS: Fast, light, good keyboard, quick recharge, 60MB hard disk option
CONS: Expensive, short battery life, text could be sharper

Here we have the first of three virtually identical 16-MHz "triplets" built by Tandy in Fort Worth, Texas, from boards designed by Matsushita. These rugged, 7.2-pound systems are the fastest, lightest 286 notebooks you can buy. They all provide capable keyboards and paper-white displays, and they recharge in less than 90 minutes—but their battery life is barely over 2 hours. The only key differences between the triplets are service and price. Grid sells its box for $4285—the highest price in the roundup—but you can get Tandy's version for about $800 less, and Panasonic's clone for nearly $1500 less.

Grid's tech support is the best of the three, and it's the only one of the triplets to boast a 60MB hard disk option. This makes it your best bet as a 286 *Windows* machine—but you'll have to decide whether that's worth $1500.



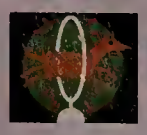
This speedy 16-MHz machine is both light and tiny—and its 60MB hard disk option will be welcome to Windows users.

Buying Smart: Have Notebook, Will Travel

Whether you need to run *Windows* in the window seat or update your marketing plan in a meeting, spend one day schlepping a notebook around, and you'll agree there's no such thing as too light or too small. But as notebooks come closer to desktop PCs in capability, other buying issues become increasingly important.

PORTABILITY
Don't let a salesperson talk you into anything heavier than 10 pounds traveling weight: That includes a built-in floppy, the battery, the AC charger, and a modem.

BATTERY
Demand at least 3 hours of battery life with power-saving features like hard disk time-out *disabled*. While these options may buy you a few more minutes of life, they make working much less efficient. Recharge time of 1.5 hours or less is a big plus.



PERFORMANCE
All things being equal, the faster your processor runs, the quicker you'll be done with your work. If you can't live without *Windows*, you'll definitely want a 16-MHz system.

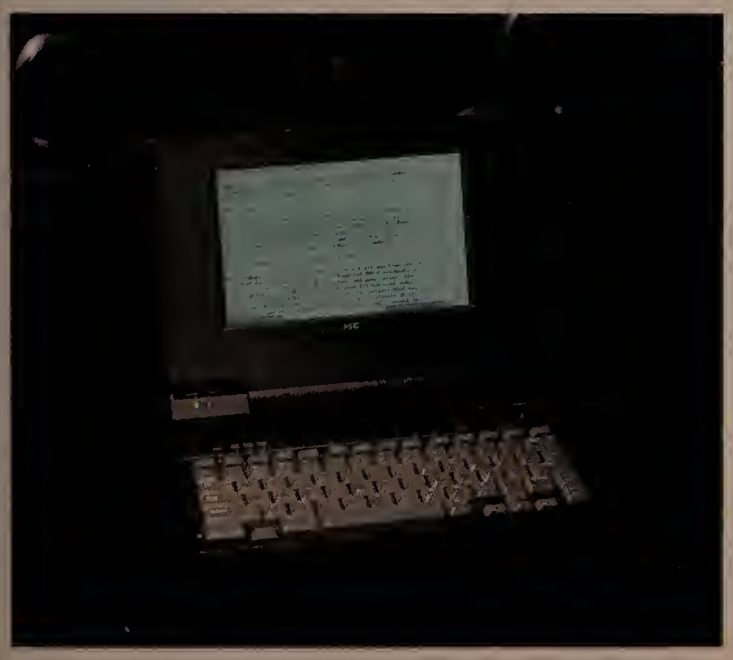
EXPANDABILITY
Many applications can benefit from a large RAM disk or lots of expanded memory, so we consider 2MB RAM capacity a minimum; 4MB is even better for *Windows*. And while a 40MB hard drive is big enough for most purposes, *Windows* users will want at least 60MB.

SCREEN
All these systems have backlit or sidelit displays. The bigger the screen, the better; but watch out for squat screens that distort graphics and make text hard to read. The more gray shades your notebook can display, the better color graphics will appear on the monochrome screen—look for 16.

KEYBOARD
The closer your notebook keyboard comes to the standard PS/2 model, the better. Emulated keys (which, for example, force you to hold down a special key to make a cursor key work as <Page Down>) slow typing and increase errors. Look for dedicated cursor keys in the familiar inverted T, and dedicated page and function keys. Standard layout for <Alt> and <Ctrl> makes life easier too.

SERVICE AND SUPPORT
The key service issue is quick replacement, plus data recovery—there's little to "repair." For tech support, we call each central number three times; support is scored on promptness, accuracy, and standard support policies.

PRICE
Cost comparisons are based on *street price*. We call PC dealers in major cities and get a quote for the *PC World* configuration. Results are averaged.



This light, compact low-price champ will run you about $2600, but the battery dies after only 100 minutes.

NEC UltraLite 286F

PROS: Inexpensive, small
CONS: Short battery life, emulated page keys

If you want to know the very least you can spend for a 286 notebook, ask NEC. At $2558 the 286F sets the price curve, and yet it's small and light, with crisp double-scan CGA text and a fairly fast recharge time. Of course there are trade-offs, and one of them—a fleeting 100 minutes of battery life—is pretty serious. Also, performance is slow, graphics are only CGA resolution, and the screen is small and a bit wide. The biggest disappointment is the mushy keyboard, which forces you to press <Fn> to activate the emulated <Page Up> and <Page Down> keys.

Tech support is fast and accurate, but there's no turnaround guarantee. The bottom line? There may be better 286 notebooks, but no cheaper ones. So if you're on a budget and rarely work away from the power outlet, this system could be talking to you.

FEATURES EVALUATION

The Bearable Lightness of Being a Dell

You'll hold up longer, and work better, with the Best Buy System 212N from Dell.

● Yes
○ Na
◒ Deficient

	Compaq LTE/286 [1]	Dell System 212N	Grid 1720	NEC UltraLite 286F	Panasonic Business Partner 270	Tandy 2810HD	Toshiba T1200XE	Zeos Notebook 286
Standard features								
Street price [2]	$2870 [3]	$2947	$4285 [4]	$2558	$2790 [4]	$3499 [4]	$2969 [4]	$2682 [4]
List price [2]	$3597 [3]	$3081	$4285 [4]	$3597	$4136 [4]	$3499 [4]	$3846 [4]	$2682 [4]
CPU speed	12/8 MHz	12/8 MHz	16/8 MHz	12/6 MHz	16/8 MHz	16/8 MHz	12/6 MHz	12/8 MHz
Portability								
Traveling weight (pounds) [5]	8.6	7.7	7.2	8	7.2	7.2	9.75	8.8
Size (inches)	11x8.5x1.9	11x8.5x2.1	12.1 x 10 x 1.8	11.5 x 8.5 x 2.1	12.1 x 10 x 1.8	12.1 x 10 x 1.8	12.2 x 11 x 2	12.2 x 10 x 2
Volume (cubic inches)	178	196	218	205	218	218	268	244
Battery								
Battery life (power-saving enabled/ disabled, hours:minutes)	5:00/4:10	3:40/3:20	3:00/2:10	3:00/1:40	3:20/2:10	3:20/2:10	2:35/2:10	3:20/2:30
Recharge time	9:15	2:30	1:23	1:40	1:23	1:23	2:40	1:02
Expandability								
RAM capacity	2.6MB	5MB	5MB	5MB	5MB	5MB	5MB	5MB
Largest hard disk option	40MB	40MB	60MB	20MB	20MB	20MB	40MB	60MB
Mouse port	○	●	○	○	○	○	○	○
Expansion chassis available	○	●	○	○	○	○	●	○
Screen								
Display	CGA	VGA	VGA	CGA	VGA	VGA	CGA	VGA
Size (square inches)	29	41	35	35	35	35	39	43
Shades of gray [6]	4	16	16	16	16	16	4	16
Keyboard								
Cursor keys in standard T	○	●	●	●	●	●	●	●
Dedicated page control keys	○	●	●	○	●	●	●	○
Dedicated function keys	○ [7]	●	●	●	●	●	●	●
Service and support								
Warranty (months)	12	12	12	12	12	12	12	12
On-site service available	○	●	○	○	○	○	○	○
Vendor support								
Central support/toll free	●/●	●/●	●/●	●/●	●/●	●/○	●/●	●/●
Daily support (hours)	12	15	11	9	9	9.5	10	24
Weekend support	○	●	○	○	○	○	○	●
Electronic BBS/fax	○	●	○	●	○	●	●	●
Turnaround policy	○	24 hrs on-site	10 days	○	○	○	24 hours	24 hours
Vendor-to-dealer support								
Dedicated support staff required	●	direct	direct	●	○	●	●	direct
Support staff training required	●	direct	direct	●	○	●	●	direct
Dedicated support line for dealers	●	direct	direct	●	●	●	○	direct
Inventory and parts requirement	●	direct	direct	●	○	○	●	direct
		BEST BUY						

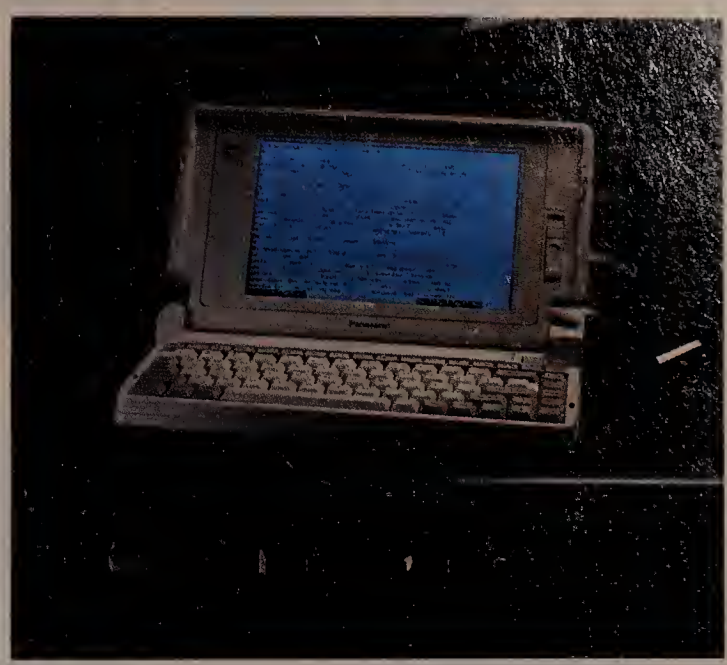
[1] 1990 World Class Award winner.
[2] Standard configuration includes 2MB RAM, 20MB hard disk, 1.44MB floppy drive, 2400-baud modem, at least one parallel and one serial port, and DOS.
[3] Includes 2.6MB RAM.
[4] Includes 3MB RAM.
[5] Including built-in floppy, battery, AC adapter, modem.
[6] Including black and white.
[7] <F11> and <F12> are simulated.

Panasonic Business Partner 270

PROS: Inexpensive, fast, light, good keyboard, quick recharge
CONS: Short battery life, poor tech support

Like the clones sold by Grid and Tandy, Panasonic's 16-MHz Business Partner 270 is very fast and highly portable (7.2 pounds), but unlike its siblings, it's also cheap. The downside here is disk space: Panasonic limits you to a 20MB hard disk, which pretty much bars you from running *Windows*. The Business Partner compensates for this, however, with an amazing lowball street price of $2790. As with all the triplets, text on the paper-white display is a bit soft, and circles turn into eggs.

One thing Panasonic doesn't share with Grid and Tandy is good tech support. We found it almost impossible to reach a technician, and when we *did* get through, the information we got was not entirely accurate. Still, if you can live with only a bit more than 2 hours of battery life, it's hard to resist such a fast 286 notebook at such a low price.

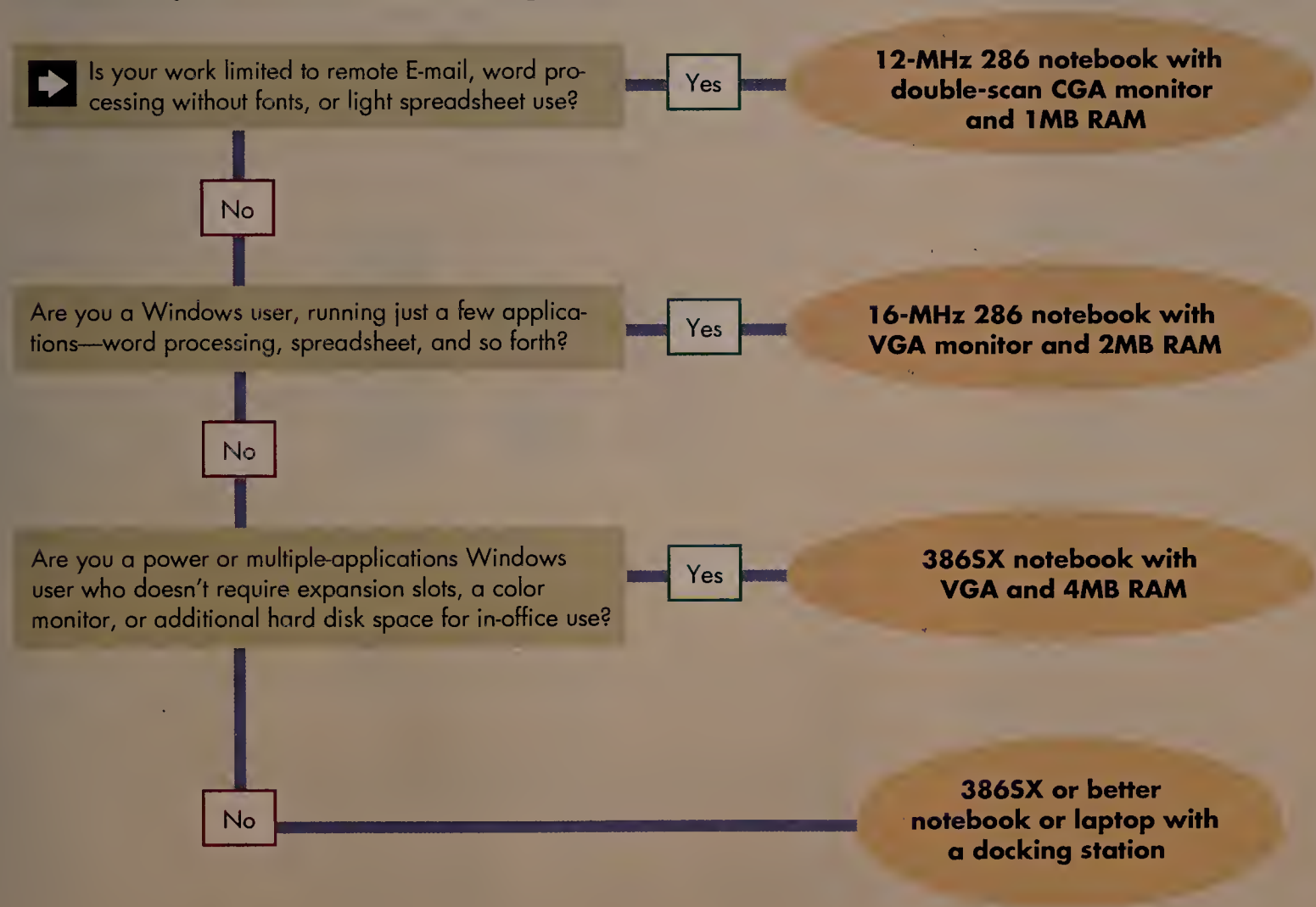


Like the Grid, this 16-MHz system is fast, light, and small. It's also inexpensive—but its biggest disk option is 20MB.

KNOW YOUR OPTIONS

Picking the Proper Portable

You know you want one for the road. Now comes the bewildering part: Should you plunk down $2500 for a 286, $3000-plus for an SX notebook, or even more for a machine with a docking station? Use this chart to determine your minimum hardware requirements.



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without upgradi

An unimpressive report is something you'll never have to create again.

Align titles or text across a range of columns—left, right, or center—with one simple command.

You can wrap text around graphs automatically.

Add freehand drawings or symbols to call attention to critical data.

A feature that only 1-2-3 offers to DOS spreadsheet users is the ability to embed as many "live" graphs on a worksheet as you'd like.

Improved, 3D-effect graphs can add even more impact to your report.

Mix bold, italics, underlines, colors, and typefaces to create over 100 text style combinations—more than any other spreadsheet.

Thanks to Auto Compress, you can easily make an entire report fit on one page.

WeCycle Waste Corporation
The Materials Research Group Recommendation:
FOCUS: ALUMINUM

-- Research Group provides the
cycle continue to

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basis fc
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during

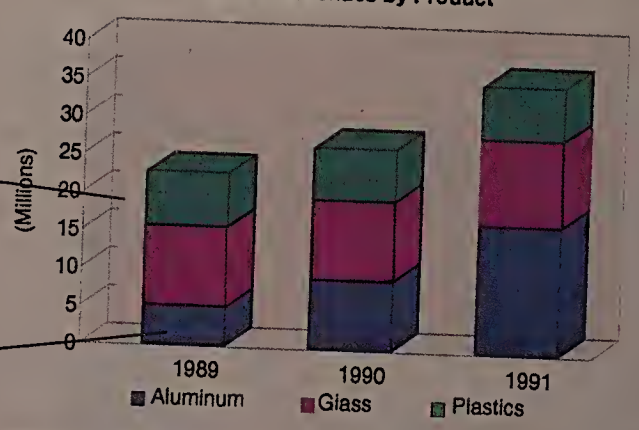
WeCycle Waste Corporation

The Materials Research Group Recommendation:

FOCUS Aluminum

This study conducted by the Materials Research Group provides the basis for our most recent recommendation that WeCycle continue to expand its aluminum recycling capacity by another 70% over the next 6 years. The graph to the right shows the increasing proportion of our business provided by the aluminum division during the past three years, now approximately half of all revenues. It is our opinion that, at this rate of growth, aluminum recycling will continue to offer our company its greatest opportunity for expansion over the next decade, and certainly into the 21st century.

Gross Revenues by Product



WECYCLE PRODUCT	1989	1990	1991
Aluminum			
East	2,323,426	4,019,527	7,315,539
Central	1,372,347	2,374,160	4,320,972
West	1,726,492	2,986,831	5,436,033
Total	5,422,265	9,380,518	17,072,544
Glass			
East	2,496,721	2,567,821	2,798,925
Central	3,598,757	3,217,693	3,507,285
West	4,217,635	4,471,294	4,873,710
Total	10,313,113	10,256,808	11,179,920
Plastics			
East	2,897,493	3,171,243	3,234,668
Central	1,873,938	1,823,697	1,860,171
West	2,378,942	1,967,421	2,006,769
Total	7,150,373	6,962,361	7,101,608

Glass and Plastics

As can be inferred from the graph to the left, glass and plastics recycling has been holding steady throughout this same period, and has consequently become a smaller proportion of our overall sources of revenue.

Although this group would strongly recommend that WeCycle Waste Corporation do all that is necessary to increase its activities in these areas, our studies have shown that aluminum will become increasingly the material of choice in the shipping, heavy manufacturing and container industries.

Aluminum

It is our opinion that sources of aluminum products will be pressed close to their limits over the next decade.

Therefore, we propose that WeCycle Waste Corporation invest in more aluminum capacity during the next five years in order to take the best advantage of this increasing market demand.

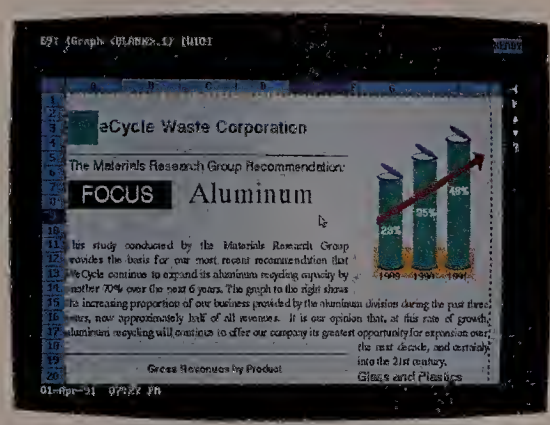
e your spreadsheet
g your hardware.

There's a lot to like about the new tus® 1-2-3® for DOS Release 2.3.

For starters, it's not just a graphical readsheet. It's a fast, graphical spread-eet for DOS. It's easy to use. And it rks as well on an older XT with just 2K of memory as it does on the newest 6 machine.

It also shares many features in common with our powerful 3D spreadsheet 1-2-3, Release 3.1. Including its superb spreadsheet formatting and publishing capabilities and full mouse support. Along with its pular Auto Compress feature that gives 1 a trouble-free way of making larger rksheets print on a single page.

We've also added new features you n't find in other spreadsheets. Like the Viewer (based on Lotus Magellan® technology) which lets you view files before retrieving them and makes file linking as easy as point and click. And a very helpful Auditor that simplifies the job of documenting and analyzing worksheet logic.



With its WYSIWYG graphical environment, you can do all your formatting "live" on screen.

Of course, you won't just like what Release 2.3 does. You'll like how it feels. It's quick and smooth. With a WYSIWYG (what-you-see-is-what-you-get) graphical environment that lets you format text, data, and graphics "live" on screen. With the mouse, you can execute commands, highlight cells or ranges, open dialog boxes, place and size graphs, change type styles, fonts and point sizes. All with unparalleled speed and ease.

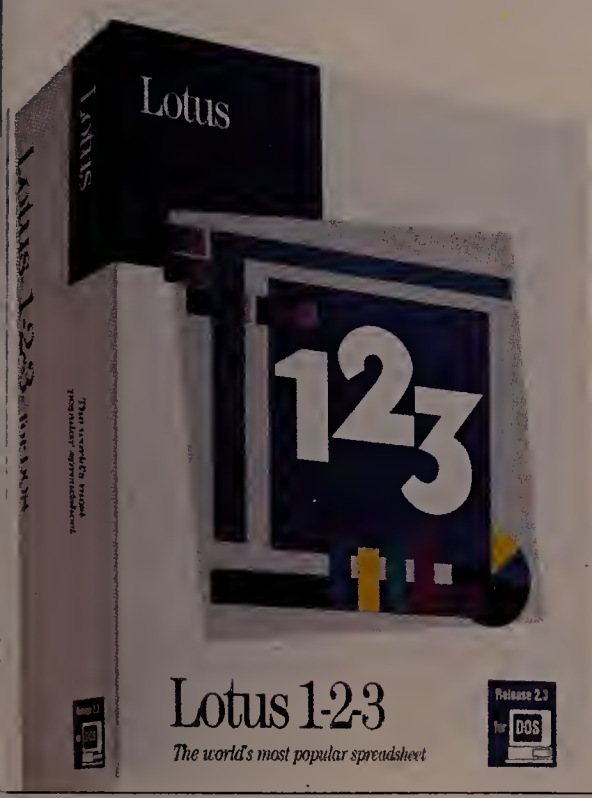
Lotus 1-2-3 Release 2.3 runs smoothly and quickly no matter what hardware you're running it on.

What's more, Release 2.3 gives you a wide range of printing and reporting capabilities. Including the capacity to place as many live graphs on a worksheet as you'd like.

Along with 96 type style combinations, drop shadows, new 3D-effect graphs, drawing and annotation tools, and the most font support, choices of colors and shading available.

Compatibility? As with any 1-2-3 product, it's no problem. Because Release 2.3 will read all of the files you've created on previous versions of 1-2-3, including files you've formatted using Allways™ and Impress.™ So you'll preserve all your work, as well as your training.

For more information see your Lotus Authorized Reseller. For a free demo or to order your upgrade directly from Lotus* call **1-800-TRADE-UP, ext. 6079.**



What's New In Lotus 1-2-3 Release 2.3.

- A WYSIWYG graphical environment with live on-screen formatting
- Lotus Magellan viewer technology for fast file previewing, retrieving and linking...all without leaving your active worksheet.
- More graph types, including 3D-effect graphs and graph annotation capabilities.
- Auto Compress, for a trouble-free way of making larger worksheets print on single page
- Dialog Boxes for an easier, more interactive way of working
- Text-editing for easy on-sheet word processing, including automatic word wrap, even around graphs
- The Auditor for documenting or highlighting your spreadsheet logic
- Improved memory management for building larger worksheets up to 12 MB in size
- New printer drivers that support all leading laser and dot-matrix printers
- Context-sensitive, interactive Help and an on-line tutorial

lease have your credit card and product package ready when you call. In Canada, call 1-800-668-1509.

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The new Lotus 1-2-3 for DOS

Lotus

Best of the Rest

So many machines, so few pages! The table below highlights 22 more contenders fighting for space on your lap.

	List price[1]	CPU speed (MHz)	Size (inches)	RAM capacity (MB)	Largest hard disk option (MB)	Warranty (months)
AST Premium Exec 286	$2495	12	9.1 x 11.4 x 2.3	8	60	12
A-Tronic SuperLite 286/16	$1450	12	10.4 x 12.1 x 1.9	4	60	12, 24[3]
Austin 286/12	$1890	12	9.5 x 12.2 x 2.1	3	40	12
Commax Technologies NT286	$1795	12	10.5 x 12.0 x 2.0	4	40	12
CompuAdd Companion	$1995[2]	12	8.5 x 11.0 x 1.4	3	20	12
Core Pacific Ortho LP-286N	$1999	12	8.4 x 12.0 x 2.9	2	40	12
Dauphin 1000 Lapbook	$2295	12	11.5 x 12.5 x 2.2	8	60	12
Librex 286	$3150	12	8.3 x 11.7 x 2.0	4	60	12
Magnavox Metalis/286	$2699	12	8.5 x 11.0 x 2.1	8	20	12
Mitsubo Ninja Notebook 286	$2275	12	8.5 x 11.0 x 2.0	8	40	12
Modern Computer NoteStar 902	$2399	12	9.5 x 12.2 x 1.7	8	40	12
Ogivar Internote 286	$2999	12.5	10.0 x 12.3 x 2.0	5	20	12
Olivetti Notebook A12	$2495	12	8.2 x 11.6 x 2.0	5	20	12
Olivetti V16	$3199	16	8.2 x 11.6 x 2.0	6	40	12
Packard Bell PB286NB	$3995	12	8.6 x 11.0 x 1.9	8	40	12
Sanyo MBC-17NB	$2999	12.5	10.0 x 12.3 x 2.0	5	20	12
Sharp-PC 6220 [4]	$3199[2]	12	10.8 x 11.0 x 1.4	3	20	12
TI TravelMate 2000 [4]	$2369[2]	12	10.8 x 11.0 x 1.4	3	20	12
Toshiba T2000	$3149	20	10 x 12.2 x 1.9	9	40	12
TRAC 286 Notebook	$1599	12	10.5 x 12.0 x 2.0	4	40	12
Trans PC LT 2100	$1700	12	10.0 x 12.0 x 2.0	4	40	12
Zenith MastersPort 286	$2699	12	8.5 x 11.0 x 2.0	2	30	12

[1] With 1MB RAM, 1.44MB floppy, and 20MB hard disk.
[2] External flappy drive.
[3] 12 months parts, 24 labor.
[4] October 1990 Best Buy.

WHERE TO BUY

AST Research
16215 Altan Pkwy.
P.O. Box 19658
Irvine, CA 92713-9658
800/876-4278
Reader service no. 612

A-Tronic Computer
15703 E. Valley Blvd.
City of Industry, CA 91744
800/888-6118
Reader service no. 613

Austin Computer Systems
10300 Metric Blvd.
Austin, TX 78758
800/752-1577
Reader service no. 614

Commax Technologies
2031 Concourse Dr.
San Jose, CA 95131
800/526-6629,
408/435-5000
Reader service no. 615

CompuAdd Corp.
12303 Technology Blvd.
Austin, TX 78727
800/627-1967
Reader service no. 616

Core Pacific Electronics
197 Meister Ave.
Branchburg, NJ 08876
908/704-8383
Reader service no. 617

Dauphin Technology
1125 E. Saint Charles Rd.
Lombard, IL 60148
708/627-4004
Reader service no. 618

Librex Computer Systems
1731 Technology Dr.
#700
San Jose, CA 95110
800/248-4880
Reader service no. 619

Magnavox
Philips Consumer Electronics
One Philips Dr.
P.O. Box 14810
Knoxville, TN 37914-1810
615/521-4316
Reader service no. 620

Mitsuba Corp.
1925 Write Ave.
La Verne, CA 91750
800/648-7822
Reader service no. 621

Modern Computer Corp.
35 Cotters Way, Bldg. C-1
East Brunswick, NJ 08816
212/488-5916
Reader service no. 622

Ogivar Technologies
7200 Trans Canada Hwy.
Ville St.-Laurent
Quebec, Canoda
H4T 1A3
800/665-4631
Reader service no. 623

Olivetti Office USA
765 U.S. Hwy. 202
Bridgewater, NJ 08807
800/527-2960
Reader service no. 624

Packard Bell
9425 Canoga Ave.
Chatsworth, CA 91311
818/773-4400
Reader service no. 625

Sanyo Business Systems
51 Joseph St.
Moonachie, NJ 07074
800/524-0047
Reader service no. 626

Sharp Electronics
Sharp Plaza
Mahwah, NJ 07430
800/237-4277
Reader service no. 637

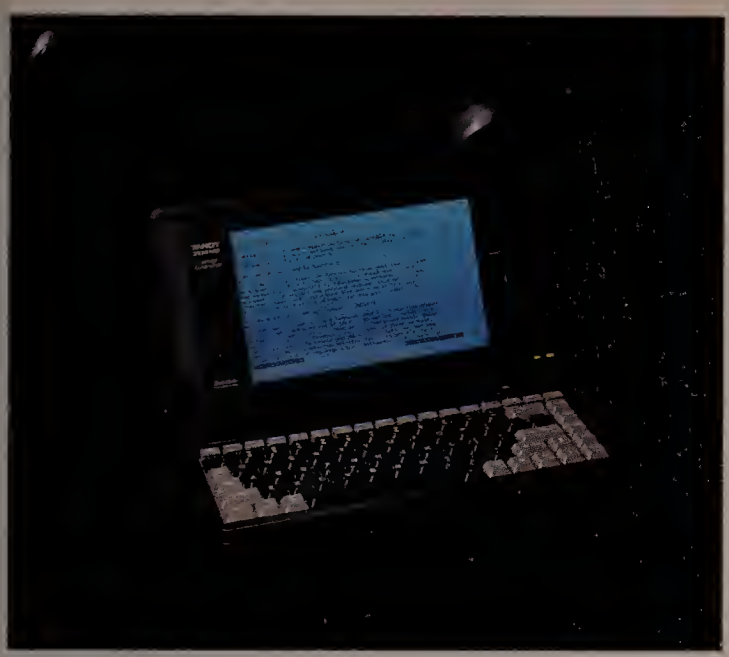
Texas Instruments Inc.
P.O. Box 202230
Austin, TX 78720-2230
800/527-3500
Reader service no. 627

TRAC Int'l Corp.
2552 N.E. Expwy.
Atlanta, GA 30345
404/320-6900
Reader service no. 628

Trans PC Systems, Inc.
11849 E. Firestone Blvd.
Norwalk, CA 90650
213/868-6930
Reader service no. 629

Zenith Data Systems
2150 E. Lake Cook Rd.
Buffalo Grove, IL 60089
800/553-0331
Reader service no. 630

For more information on all products listed here, circle reader service no. 902.



Priced between the virtually identical Grid and Panasonic, the Tandy is fast, light, and tiny—and cursed by short battery life.

Tandy 2810HD

PROS: Very fast, very light, good keyboard, quick recharge
CONS: Expensive, poor battery life

This 16-MHz system—triplet number 3—is just as fast and light as the others and suffers from the same short battery life and elongated screen. At $3499, it's about $800 less than the Grid but costs $700 more than the Panasonic. Tandy, which actually builds the triplets, puts the identical (excellent) keyboard in all three. You get dedicated cursor keys in an inverted T, dedicated page control keys, and 12 function keys. Plus (as with all three), there's a special screen touch: Instead of using a slider to adjust brightness, which always seems to slip out of adjustment, you set a handy three-position switch.

Tech support is available fast from a central number or your local Radio Shack store, but it misses a perfect support score because one of our questions was answered incorrectly. Overall value: three stars—a good buy.

PC WORLD TEST REPORT

New 16-MHz Notebooks Deliver Top Speed

The 16-MHz clones beat the 12-MHz contenders but still can't match a 386SX notebook.

Methodology
The notebooks had 3MB RAM and 20MB hard disks, except the NEC UltroLite, which had 2MB RAM, and the Campoq, which hod 2.6MB RAM.

WordPerfect 5.1
We refarmat three documents varying from 5K to 55K. The files ore text with baldface and underlining; ane dacument includes a TIFF imoge.

dBASE IV 1.1
With the caching feature enabled, we complete on unindexed seorch far a single recard in a 100,000-recard parts toble. Then we index the table, run the transactian processing madule, and past 600 records.

1-2-3
We laad the applicatian, followed by three seporote worksheets (orithmetic, financial, and scientific). We perfarm variaus changes and recalcs an eoch.

Paradox
Starting with an arders toble, we compore eoch record with an availoble stock table. The applicatian finds the current price far the items and inserts the resulting recard inta on invaice toble.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

Toshiba T1200XE

PROS: Large screen, crisp display, good keyboard, expansion chassis available
CONS: Poor performance, heavy, large, short battery life

This aging pioneer needs an upgrade. Its slow performance and 9.8-pound traveling weight will drag you down, and it's the largest machine in the roundup. Also, the Toshiba's ergonomics leave a lot to be desired: An awkward latch makes it hard to open, and adjusting brightness or contrast requires pushing and twisting two tiny disks. Moreover, the notebook's battery life is surprisingly short for its weight.

The good news is that you get both a well-designed keyboard with a desktop feel and a nice big screen. The CGA graphics are somewhat old-fashioned, but the T1200XE's double-scan text is still fabulously crisp. Tech support could be faster, and we were given misinformation about battery charging technique. How does it all add up? The Toshiba was a smart buy only a few years ago, but times have changed, and you can do better.

Reasonably priced, with a fine keyboard and a crisp display, this veteran notebook is also heavy and fairly slow.

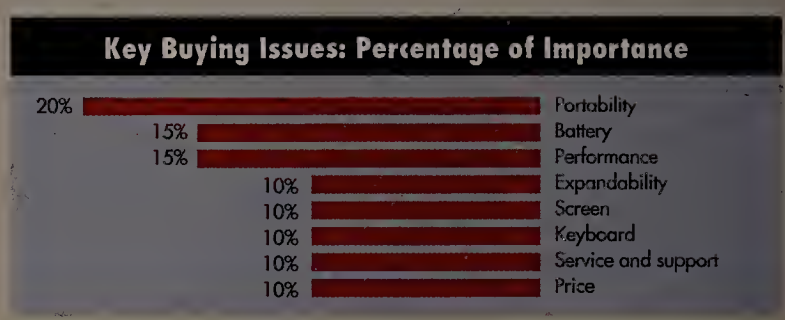
EXECUTIVE SUMMARY

Dell's Traveling Light Show

Light and long-lasting, Dell's System 212N lifts the weight of your work load from your shoulders.

BEST BUY

Because you're the one who has to carry it, it might as well be the Best Buy **Dell System 212N**. Affordable, long on battery life, and backed by superb support, this 12-MHz Dell is the best 286-based notebook on the market. However, if speed is crucial, you might move to one of the near-identical 16-MHz models from Grid, Panasonic, or Tandy. The triplets are fast but can't last long away from the power plug.



Excellent ★★★★
Good ★★★
Fair ★★
Poor ★

	Reader service no.	Portability	Battery	Performance	Expandability	Screen	Keyboard	Service and support	Price	Overall value
Dell System 212N	605	★★★★	★★★½	★★★½	★★★½	★★★★	★★★★	★★★★	★★★½	★★★★
Compaq LTE/286	604	☆☆☆	☆☆☆½	☆☆½	☆☆½	☆½	☆☆½	☆☆☆½	☆☆☆½	★★★
Grid 1720	606	☆☆☆½	☆☆	☆☆☆☆	☆☆☆☆	☆☆☆	☆☆☆½	☆☆☆½	☆	★★★
NEC UltraLite 286F	607	☆☆☆	☆½	☆☆☆½	☆☆½	☆☆½	☆☆½	☆☆☆½	☆☆☆☆	★★★
Panasonic Business Partner 270	608	☆☆☆½	☆☆	☆☆☆☆	☆☆½	☆☆☆	☆☆☆½	☆½	☆☆☆½	★★★
Tandy 2810HD	609	☆☆☆½	☆☆	☆☆☆☆	☆☆½	☆☆☆	☆☆☆½	☆☆☆½	☆☆	★★★
Zeos Notebook 286	611	☆½	☆☆☆	☆☆☆	☆☆☆☆	☆☆☆☆	☆☆½	☆☆☆	☆☆☆☆	★★★
Toshiba T1200XE	610	☆	☆½	☆☆	☆☆☆½	☆☆☆	☆☆☆½	☆☆☆	☆☆☆	★★½

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

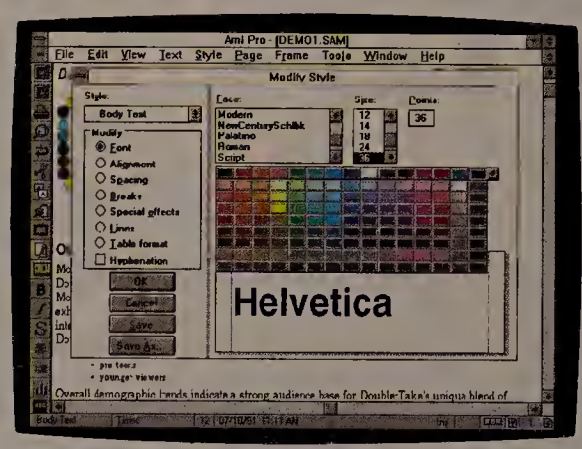
"I can do what?"

Ami Pro 2.0 Brings Visual Word Processing to Windows.

What separates Ami Pro™ 2.0 for Windows™ from every other word processor in the world? The ability to create documents the way you think, with words, pictures, graphs, symbols, drawings and colors.

We call it Visual Word Processing, and it's the fastest, easiest and most direct way to get what's on your mind on paper.

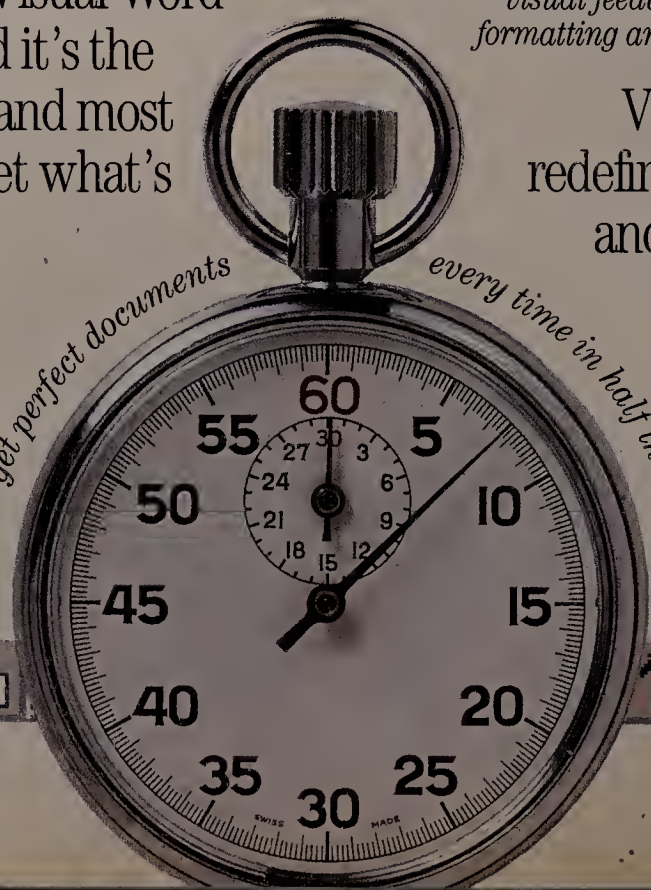
With Visual Word Processing, complicated keystroke commands are a thing of the past. You work directly on-screen with SmartIcons™ that give you one-click access to every word processing feature you need or want—from basic commands to your customized procedures.



Interactive dialog boxes give you immediate visual feedback on all your formatting and layout options.

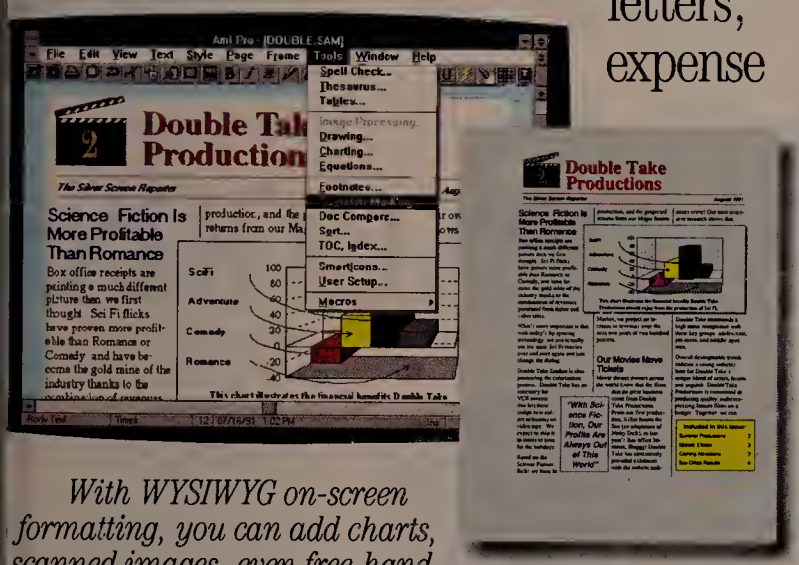
Visual Word Processing not only redefines the way you work with words and pictures, it redefines the way your finished work looks.

Since Ami Pro is the only word processor designed from the ground up to work



exclusively with the Windows environment, you can now take full advantage of all the rich graphic capabilities of Windows. You get true WYSIWYG that lets you edit in any view, and print out at anytime, whether you're zoomed in or zoomed out on the page.

Ami Pro even comes with two dozen pre-formatted Style Sheets so you can get professionally designed letters, expense reports, memos, reports and presentations as fast as it takes you to type in your text.



With WYSIWYG on-screen formatting, you can add charts, scanned images, even free-hand drawings, then wrap text around any graphic you want.

Visual Word Processing with Ami Pro 2.0 even redefines power word processing. Such features as spell check, thesaurus, a full macro language, two way DDE support, merge, tables, variable view levels and integrated drawing and charting are all part of the package. And of course, Ami Pro 2.0 reads and writes all other word processing file formats.

Ami Pro gives you an almost limitless combination of type sizes, styles and colors.

Naturally, Ami Pro 2.0 is integrated with the entire suite of Lotus® Windows applications. In fact, you have the ability to launch into two of the world's leading business applications: 1-2-3® and cc:Mail,™ right from Ami Pro.

But see Ami Pro 2.0 for yourself. If you're currently a word processing user and would like to upgrade to Ami Pro 2.0 for only $129, or for a free working model, call **1-800-TRADEUP, ext. 6020.**

"Beg or borrow time on a system running Ami Pro, and you'll soon see what a word processor should be... It's the Best Buy for Windows users."
—PC World (6/91)

No other word processor can bring your words to life on paper like Ami Pro 2.0 for Windows.

Introducing Ami Pro 2.0 for Windows

Lotus

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Printers for people who want to look as good at home as they do in the office.

When you put your ideas on paper, they have to make a great impression. And that's a given, with either of these two new Panasonic® printers. Because both offer the impressive value and performance you'd expect from the people who make the industry's best-selling 24-pin printer.*

The KX-P1124i, the office model, gives you 11 built-in fonts, including Super Letter Quality for an exceptionally professional appearance. You also get the versatility of bottom, front and rear paper paths. 300 cps draft speed. And a new LCD display on the EZ™ Set control panel that takes "user friendly" to a new level. For the price, there isn't another printer on the market that even comes close.

The KX-P1123 brings home nearly the same capabilities, at a price that's even more affordable. It has 7 fonts, three paper paths, EZ Set front panel, and 240 cps draft speed. Plus a new automatic microline feed that makes paper loading a cinch.

The Panasonic KX-P1124i and KX-P1123. Two very good reasons to see your Panasonic dealer very soon. And see for yourself why our strongest impression is value. A phone call to **1-800-742-8086** will bring you more information.

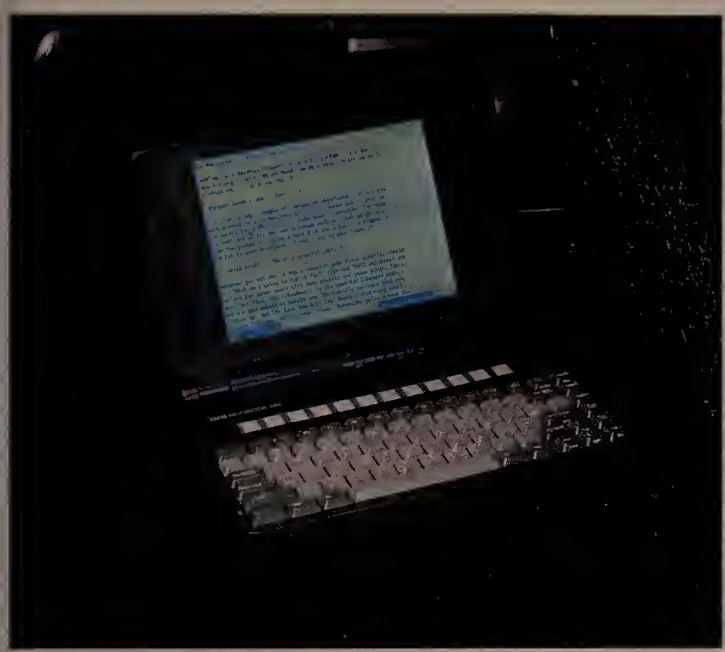
Printers, Computers, Peripherals, Copiers, Typewriters and Facsimiles

Panasonic
Office Automation

* The Panasonic KX-P1124. Based on US dollar share of competitive models for the 12 months ending December, 1990, as reported by InfoCorp. (1/91).

P6-PCD

Circle 231 on reader service card



This machine has lots to like: a 60MB disk option, a big screen, and a decent price—but it's a bit large and heavy.

Zeos Notebook 286

PROS: Low price, large screen, crisp display, fast recharge, 60MB disk option
CONS: Heavy, large, short battery life, emulated page keys

If price is a priority, and you want a big screen to make presentations look their best, then the $2682 Zeos Notebook 286 is your best choice. Not only is its shapely screen the largest in the roundup, it renders circles free from distortion, and text is crisp and sharp. On the downside, this notebook is one of the largest and heaviest of the bunch; and the keyboard could be better—page keys are emulated, and the touch is soggy.

Tech support is fast, and available 24 hours a day, seven days a week—but while two questions were answered correctly, we were misled about installing a 287 coprocessor until we got the technician to ask his supervisor. The Notebook 286's nice price and super screen make it ideal for sales reps who depend on good-looking presentations, but check out the keyboard and heft before you buy.

WHERE TO BUY

Compaq LTE/286
Compaq Computer Corp.
P.O. Box 692000
Houston, TX
77069-2000
800/231-0900,
713/374-1740 (fax)
LIST PRICE: with 640K RAM, 20MB hard disk, 1.44MB floppy, battery pack, AC adapter $2499; with 40MB hard disk $2799
ACCESSORIES: 1MB RAM $349, 2MB $699, 4MB $1499; battery pack $129; 2400-baud MNP-5 modem $369; DOS 3.31 $120, DOS 4.01 $150
Reader service no. 604

Dell System 212N
Dell Computer Corp.
9505 Arboretum Blvd.
Austin, TX
78759-7299
800/937-1470,
512/338-8700 (fax)
LIST PRICE: with 1MB RAM, 20MB hard disk, 1.44MB floppy, battery pack, AC adapter, DOS 4.01 $2518; with 40MB hard disk $2818
ACCESSORIES: 1MB RAM $149, 2MB RAM $249; battery pack $80; 2400-baud MNP-5 fax-modem $399
Reader service no. 605

Grid 1720
Grid Systems Corp.
47211 Lakeview Blvd.
Fremont, CA 94538
800/222-4743,
415/683-0903 (fax)
LIST PRICE: with 1MB RAM, 20MB hard disk, 1.44MB floppy, battery pack, AC adapter, 2400-baud modem, DOS $3495; with 60MB hard disk $3995
ACCESSORIES: 2MB RAM $790; battery pack $100
Reader service no. 606

NEC UltraLite 286F
NEC Technologies, Inc.
1414 Massachusetts Ave.
Boxborough, MA
01719
800/632-4636,
800/343-4418
(Massachusetts, Canada)
LIST PRICE: with 1MB RAM, 20MB hard disk, 1.44MB floppy, battery pack, AC adapter, DOS, utilities $2799
ACCESSORIES: 1MB RAM $499, 4MB RAM $1749; battery pack $129; 2400-baud MNP-5 fax-modem $699
Reader service no. 607

Panasonic Business Partner 270
Panasonic Communications and Systems Co.
Two Panasonic Way
Secaucus, NJ 07094
800/742-8086
LIST PRICE: with 1MB RAM, 20MB hard disk, 1.44MB floppy, battery pack, AC adapter, DOS $3199
ACCESSORIES: 2MB RAM $738; battery pack $99; 2400-baud modem $199
Reader service no. 608

Tandy 2810HD
Tandy Corp.
Radio Shack Division
1800 One Tandy Center
Fort Worth, TX 76102
817/390-3011
LIST PRICE: with 1MB RAM, 20MB hard disk, 1.44MB floppy, battery pack, AC adapter, VGA card, DOS $2499
ACCESSORIES: 1MB RAM $400; battery pack $100; 2400-baud MNP-5 modem $200
Reader service no. 609

Toshiba T1200XE
Toshiba America Information Systems, Inc.
9740 Irvine Blvd.
Irvine, CA 92718
800/334-3445,
714/587-6034 (fax)
LIST PRICE: with 1MB RAM, 20MB hard disk, 1.44MB floppy, battery pack, AC adapter, DOS $2299; with 40MB hard disk $2599
ACCESSORIES: 2MB RAM $1099; battery pack $79; 2400-baud MNP-5 modem $449
Reader service no. 610

Toshiba T2000
(See "Best of the Rest" sidebar)
Reader service no. 740

Zeos Notebook 286
Zeos Int'l, Ltd.
530 5th Ave. NW
St. Paul, MN 55112
800/423-5891,
612/633-1325 (fax)
LIST PRICE: with 1MB RAM, 20MB hard disk, 1.44MB floppy, battery pack, AC adapter $1995; with 3MB RAM, extra battery and external charging stand, carrying case, DOS $2495; with 5MB RAM, 2400-baud modem $2895
ACCESSORIES: 2MB RAM $349, 4MB RAM $649; 40MB hard disk $245, 60MB hard disk $495; extra battery pack $89; 2400-baud modem $219; DOS $119
Reader service no. 611

For more information about all products in this article, circle reader service no. 901.

Portable Printers: The Next Generation

Six portable printers bring the mobile office closer to reality.

TJ Byers

Think you can't take your printer anywhere? Meet the Seikosha, Kodak, and Canon portables.

LUIS DELGADO

Thanks to a new breed of light, battery-powered peripherals—hard disks, fax-modems, pocket LAN adapters, and road mice—you can hit the trail with most of your desktop computing power intact. And now, finally, the last piece is falling into place: Portable printers let you generate on-the-spot purchase orders, contracts, insurance policies, itineraries, even plain-paper faxes, no matter how far you are from the power socket. The only serious problem is speed. Except for Mannesmann Tally's premium-priced MT 735, you're looking at 3 to 5 minutes per page!

The six printers examined here—two dot matrix, two ink jet, two thermal—vary in size, weight, price, features, and output quality. But all of them print on cut sheets, two handle fanfold paper as well, and one lets you install a paper roll. Unfortunately, none of them comes with a carrying case. Here's a quick look. The weights include battery and charger.

Axonix LiteWrite

If you're looking for an inexpensive way to add portable printing to your life, the 9-pin dot matrix LiteWrite has one big advantage: This $449 printer is one of the cheapest portables you can buy. It's also the only one that handles single sheets, fanfold, *and* roll paper. Unfortunately, it's also among the heaviest and bulkiest units: 8.5 pounds and 7.5 by 13 by 3 inches. Output is legible but hardly letter quality, and the 240-dpi graphics aren't presentation quality. Printing a full page of text takes about 3 minutes.

Canon BJ-10e

Canon's 7-pound "bubble jet" is the most popular portable printer on the market. And no wonder: Output quality (both NLQ text and 360-dpi graphics) is almost as good as a laser's, thanks to its 24-nozzle printhead, and the fast-drying ink eliminates smearing. The BJ-10e's $499 list price is easy to take, too, and its whisper-quiet operation is another plus. Minuses? At 8.5 by 12 by 2 inches, it's fairly bulky. Also, it handles only one sheet at a time, but you can get an optional 100-sheet feeder for $90. Print speed is 3 minutes per page.

CP+ WsP-200

If rock-bottom price, tiny profile, and low weight top your priority list, the $400 WsP-200 may be the portable of your dreams. This 4.75-pound, 9-pin thermal printer is the cheapest, smallest—6.75 by 11.5 by 1.5 inches—and one of the lightest printers in the roundup. But there are some serious trade-offs. It's quite slow: around 5 minutes for a page of text. It requires special thermal paper that's not only expensive (11 cents a sheet) but also hard to find. And you have to insert the paper by hand, one sheet at a time. Print quality for text and 180-dpi graphics is only draft quality.

Kodak Diconix 150 Plus

Is your briefcase too heavy already? Then consider the $519, 4.5-pound Diconix 150 Plus, the lightest portable printer available today. Its svelte 6.5-by-10.75-by-2-inch dimensions are quite impressive too. The Diconix's 9-nozzle ink jet output and 192-dpi graphics are excellent, though hardly in a class with a LaserJet's. But you'd better not be in a hurry: Printing a full page of text can take as long as 5 minutes. The unit lets you feed single sheets through a rear slot, or you can use the built-in tractor drive for fanfold paper.

Mannesmann Tally MT 735
The MT 735 is a world-class machine but with a high price (and weight) to match. Its thermal-film transfer technology produces gorgeous text and 300-dpi graphics that are fully the equal of a laser printer's. Nonetheless, it's surprisingly small—8.5 by 11 by 2 inches—and its speed is outstanding: 20 seconds per page. It holds 50 sheets of paper, and its LaserJet II emulation gives you access to the entire family of HP soft fonts. But if you *must* have output this good, you'll pay $1295 for the privilege—and you'll have to schlepp around 10 pounds of heavyweight hardware.

Seikosha LT-20
If you can think of better things to do with your time than feeding sheets into your printer one by one, the $499 LT-20 is for you. A built-in copierlike tray holds 50 sheets of paper, and you can refill it without stopping the printer. Moreover, text and 260-dpi graphics are both quite good. The bad news? This 24-pin dot matrix monolith is the biggest of the bunch—11.25 by 14.5 by 2 inches—and adds 8 pounds to your load. And it dawdles at 5 minutes per page.

WHERE TO BUY

Axonix LiteWrite
Axonix Corp.
1214 Wilmington Ave.
#201
Salt Lake City, UT
84106
800/866-9797,
801/485-6204 (fax)
Reader service no. 631

Canon BJ-10e
Canon U.S.A., Inc.
1 Canon Plaza
Lake Success, NY
11042
800/848-4123,
516/354-5805 (fax)
Reader service no. 632

CP+ WsP-200
Computer Products
Plus, Inc.
16351 Gothard St.
Huntington Beach, CA
92647
800/274-4277,
714/848-6850 (fax)
Reader service no. 633

Kodak Diconix 150 Plus
Eastman Kodak
Company
Printer Products
Division
901 Elmgrove Rd.
Rochester, NY 14653
800/344-0006
Reader service no. 634

Mannesmann Tally MT 735
Mannesmann Tally
Corp.
8301 S. 180th St.
Kent, WA 98032-0413
800/843-1347,
206/251-5520 (fax)
Reader service no. 635

Seikosha LT-20
Seikosha America Inc.
10 Industrial Ave.
Mahwah, NJ 07430
800/338-2609,
201/818-9135 (fax)
Reader service no. 636

For more information about all products in this sidebar, circle reader service no. 903.

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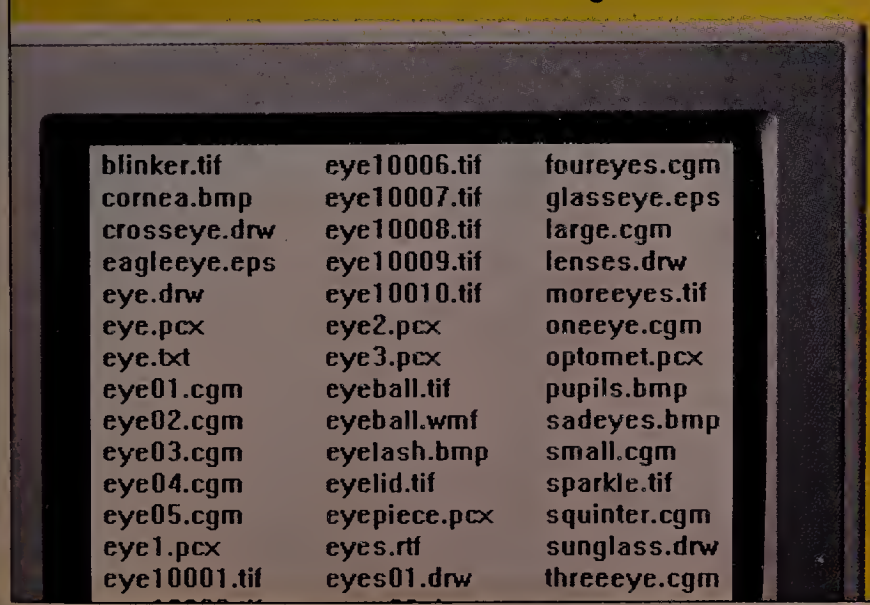
The old way.



The Scrapbook+ way.

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Heavyweight features in a lightweight system. The Dell 320N comes with features you'd normally expect in a heavier laptop model. It has a 3.5" floppy drive, an extended travel keyboard with separate cursor keys (Home, End, Page Up, Page Down), special screen navigation keys, and a high quality VGA LCD. You can choose a 40 or 60 MB hard drive, an optional built-in fax modem, and it has a sliding door that lets you easily insert a math coprocessor or extra RAM modules.

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DELL COMPUTER CORPORATION

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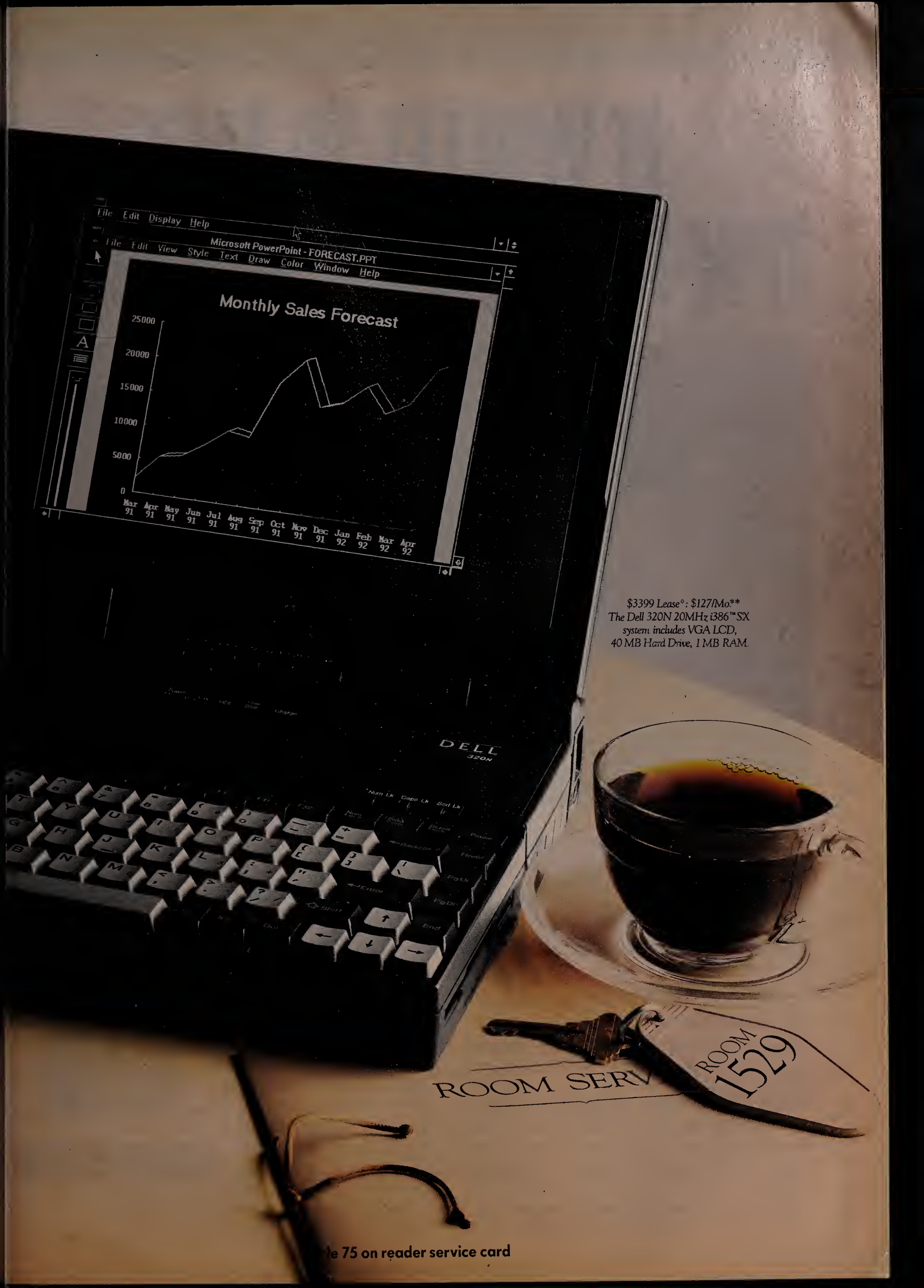

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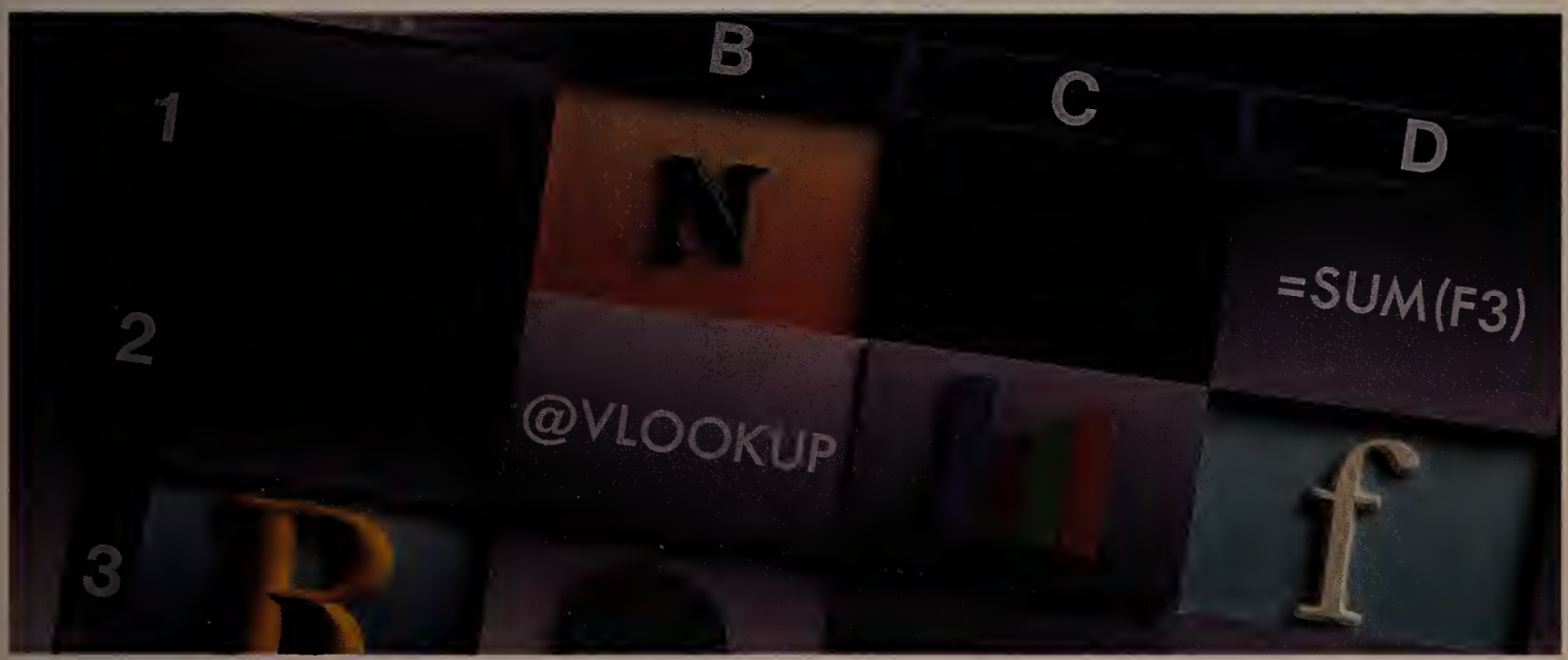
Spreadsheets: Beyond Number Crunching

Today's top spreadsheets help you manage your work from beginning to end, from what-if analysis all the way to polished reports and presentations. Will 1-2-3, Excel, Quattro, SuperCalc, or Wingz meet your needs best?

Richard Scoville



DAVID BISHOP

Want it short and sweet? Yes, *Excel 3.0* really is as good as they say. It may well be the best application running on PCs today. Not only does it succeed as a capable number cruncher, but it helps you every step of the way, from planning your spreadsheet to analyzing information to printing out dazzling reports and graphics. At the same time, it elevates spreadsheet ease of use to a remarkable new level.

If you're moving to *Windows*, you'll probably want to buy *Excel*. But what if you *don't* crave *Windows* or lack the equipment to run it? What if you, like the vast majority of spreadsheet users, have already sold the farm (not to mention your macros and add-ins) to *1-2-3?* Tough times may have reduced your department's training and support budget, so an upgrade path that's easy and cheap may prove enticing. Should you stick with the latest versions of the tried-and-true *1-2-3* or retrain users to master the greater glory of *Excel?*

Tough questions. And to make matters more complicated, here comes *1-2-3 for Windows.* Too late for review

here but due to ship in late summer, it should pose formidable competition to *Excel* (see the sidebar "1-2-3 for Windows: Same as It Ever Was").

For now, however, *Excel* wins the only Best Buy. If you're DOS bound, version 2.3 of *1-2-3* and *Quattro Pro 3.0* are good choices, and if you're an advanced user in a *1-2-3* shop, *1-2-3 3.1+* gives you the power of *Excel,* though without its polished interface.

What a Spreadsheet Should Be

Today, a winning spreadsheet program needs a split personality: First, it must be simple enough for managers to crank through routine tasks such as producing departmental budgets and expense reports—if the program isn't easy to handle, only the spreadsheet jockeys will be able to ride it. Second, it must provide the organizational and analytical tools and the programmability that power users and developers need.

In putting these six spreadsheets through their paces, we considered the programs' suitability to five major user categories: managers, corporate budget makers, financial analysts and forecasters, scientific and technical users, and application developers.

All these users get their due here, but our evaluation is skewed toward that vast majority of spreadsheet users—managers. These folks use their spreadsheet to calculate expense reports, make simple financial projections, maintain small departmental budgets, and generate reports. For them, ease of use is everything, as are capable fonts, formatting tools, and graphics for creating handsome reports.

Some managers must handle and consolidate a number of budgets. For these corporate budgeteers, the emphasis is on formula links, multisheet consolidation, and other tools used to tie together multiple worksheets. Financial analysts and forecasters have yet another agenda—here, of prime importance are tools for spotting trends and sophisticated graphics for presenting them.

We didn't forget the many scientific, engineering, and other technical users of the world—these users demand top-notch statistics, a broad spectrum of graph types, and high-end mathematical features. Finally, we judged the programs as development environments, where data management and programmability are the critical features.

Ideally, a program weaves all these features into an intuitive, accessible interface that lets you get the job done simply and quickly. And today, the product that comes closest to that ideal—especially for managers—is *Excel 3.0.*

Richard Scoville, who writes the column Spreadsheets (A..Z), *is a contributing editor for* PC World.

For more information about all products in this article, circle reader service no. 905.

1-2-3 release 2.3

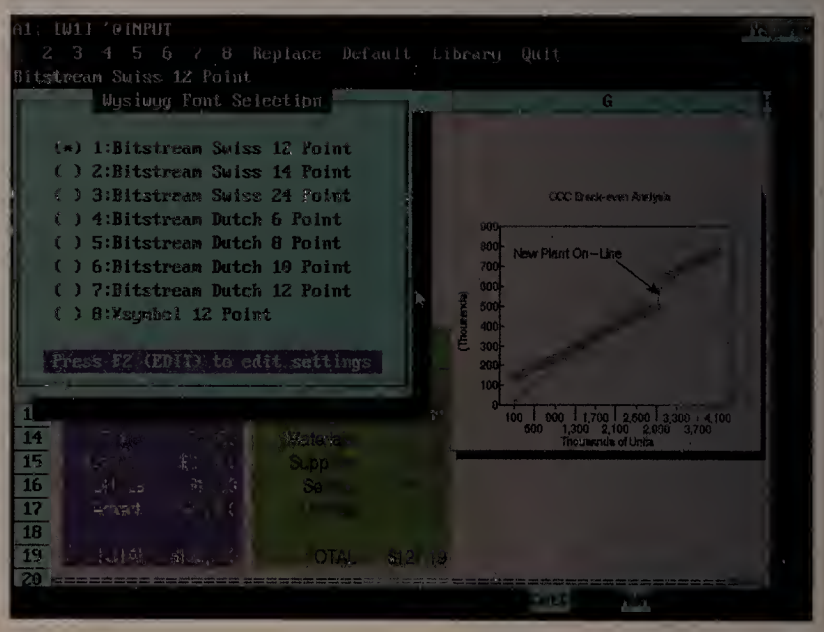
PROS: Smooth interface, good publishing features

CONS: Limited analytical, data base, and file linking tools

For current *1-2-3* users, the path of least resistance is—surprise!—*1-2-3 2.3.* This new release of the perennial best-seller is enhanced with a slick, graphical WYSIWYG interface and hot new publishing features. Yet *1-2-3*'s menu tree has sprouted even more branches with which to confuse novices, and Lotus has kept the feature set fairly primitive so as not to crowd the high-end *1-2-3* release 3.1+. If you're using an 8088 or 286 machine, the logical choice is between *1-2-3 2.3* and *Quattro Pro.* Release 2.3 is a fairly good deal, but it can't quite match *Quattro.*

The new mousable interface is a winner, and unlike *Excel, 1-2-3* runs just fine on an 8-MHz or 12-MHz 286. The dialog boxes make setting up worksheets easy, and the program's formatting styles, redefinable font palette, and cell borders let you generate polished reports quickly.

Creating a budget? Release 2.3 can handle the basics, but its impoverished file linkages will impede construction of more complex models. For financial analysis and projections, you'll have to forgo solver technology and make do with the most limited graph options in this roundup. Engineers and scientists should walk right past *2.3*'s limited modeling features and go straight to release 3.1+. Application developers may want to stay put with *1-2-3*'s time-tested macro system. They can easily update *2.2* worksheets and create applications that will work in any *1-2-3* release. But developers will probably be disappointed with the extremely limited data base features.



With 1-2-3 release 2.3, WYSIWYG comes to the masses. Applying fonts and formatting reports is now easier.

Upgrading to *2.3* is a solid, conservative move: There's no need for retraining or expensive new hardware, and you get crowd-pleasing fonts and printing. Just don't let your employees get a look at *Excel!*

Buying Smart: In Search of the Perfect Spreadsheet

Most users rate ease of use, decision support, and presentation features as key factors in choosing a spreadsheet. The much smaller segment of power users and application developers will seek depth in programmability and data management.

EASE OF USE

If you're a novice, you'll appreciate a mouse-controlled WYSIWYG interface and logically organized menus. Novices and pros alike can benefit from features like *Excel 3.0*'s innovative tool bar, automatic column widths, and ability to edit an object by double-clicking on it. Good documentation and online help are also essential.

Consider how the program performs in the hands of a skilled user. Does it offer lots of shortcuts, hot keys, and speed-up features such as formatting styles and reports?

Finally, how well does the program work with your existing applications? All these programs can read *1-2-3* release 2.2 worksheets but not all run *1-2-3* macros without modification.

DECISION SUPPORT

Look for the ability to sort columns, insert ranges, and assign cell and range notes—all helpful tools for constructing worksheets. The ability to paste functions in formulas can speed calculations.

If you're building a budget with multiple worksheets, you'll want to be able to save an entire work space of related files as a single application. You'll also want point-and-shoot formula linking, so you won't have to guess cell or range addresses when linking formulas from different worksheets.

Advanced users will want a solver, which lets you work backward from an assumption to see how it affects other variables. Analysts forecasting trends will also want regression analysis, which tells you the degree to which one variable can be predicted from another's value. Developers will need user-definable functions to provide customized functions for their users and applications.

PRESENTATION

For impressive reports, consider a graphical interface that shows what your output will look like as you work. And a page preview allows you to visualize how elements such as page margins and print ranges will appear on the entire page.

For easy printing, look for auto-compression, which automatically shrinks a print range onto a single page. Your program should also indicate the boundaries of the print range on the spreadsheet, making it easier to format multipage reports.

For graphics, you'll want to be able to plot plenty of variables on a single graph. You'll also want to be able to draw directly on a chart or worksheet. An on-screen slide-show generator could save you the price of a presentation graphics program.

PERFORMANCE

Our benchmarks are split into four groups to reflect real-world applications. Most users' work profiles will match the basic arithmetic models, but corporate budget makers should check out the consolidation models, analysts and forecasters will relate to the financial model, and scientific and engineering users should focus on the scientific model.

DATA MANAGEMENT

All the programs offer the basic data management features. But only a few offer the advanced features needed by power users, who must find, organize, and analyze raw data from a variety of sources, including other worksheet files or external data bases. High-end users will want relational queries and calculated output fields.

PROGRAMMABILITY

All the programs allow sophisticated programming. While most of the programs offer *1-2-3*-style keystroke macros, *Excel* employs a function-based macro system, and *Wingz* has a traditional programming language. Macro mavens should look for the ability to issue DOS commands and execute macros with the mouse.

PRICE

Most of these packages are around $500. All the programs are networkable, but because most users run their spreadsheets off their own PCs, our prices refer to the cost of a single package.

SERVICE AND SUPPORT

Technical support should be both quick and accurate. To test service and support, we called each vendor three times, asked questions of varying technical complexity, and noted the timeliness and accuracy of their answers. We also factored in support policies, such as hours, toll-free lines, and BBS and fax support.

FEATURES EVALUATION

Excel Excels—But Others Have Talents Too

Best Buy Excel 3.0 is a snap to use and stacked with features, while 1-2-3 3.1+ gives you multipage worksheets and 3-D range names, and Quattro Pro 3.0 packs spreadsheet power into older systems.

● Yes
○ No
◒ Deficient
▼ Limited only by available memory

	1-2-3 release 2.3 [1]	1-2-3 release 3.1+	Excel 3.0 W [2]	Quattro Pro 3.0 [3]	SuperCalc5.0c	Wingz 1.1A W
Standard features						
Price	$495	$595	$495	$495	$149	$499
Network file locking	●	●	●	●	●	●
RAM required	384K [4]	1MB	2MB	640K	512K	2MB
Virtual memory management	○	●	●	●	○	●
Movable, sizable windows	○	○	●	◒ [5]	○	●
Undo multiple operations	○	○	●	●	○	○
Print in background	●	●	●	○	○	●
File viewer	●	●	●	○	○	○
Decision support						
Sort by columns	○	○	●	○	●	○
Insert/delete range	○	○	●	○	●	◒ [6]
Select, change multiple ranges	○	○	●	○	○	●
Select range for multiple operations	●	○	●	○	○	●
Outliner	○	○	●	○	○	○
Cell and range notes	○	●	●	◒ [7]	○	○
Trace formula references	●	●	●	○	●	●
Password-protect worksheet structure	○	●	●	○	○	○
Solver: multivariable linear	○	●	●	●	○	○
Solver: multivariable nonlinear	○	●	●	○	○	○
Multipage worksheets	○	●	●	○	●	○
3-D ranges	○	●	●	○	○	○
Auto-consolidation	○	○	●	○	○	○
Save work space	○	○	●	●	○	○
Point-and-shoot formula linking	●	●	●	●	●	○
Hot links to other applications	○	◒ [8]	●	◒ [9]	○	●
Define range name with external referent	○	○	●	●	○	○
External graph ranges	○	●	●	●	○	○
Linear regression	●	●	●	●	●	●
Curvilinear regression	○	○	●	○	●	◒ [10]
Arrays	○	○	●	○	○	○
User-definable functions	◒ [11]	◒ [11]	●	○	○	●
Post function in formula	○	●	●	●	○	●
Reads/writes DBF (dBASE III)	◒ [12]	◒ [12]	●	●	●	○
Reads/writes comma-delimited ASCII	◒ [13]	◒ [13]	●	◒ [13]	●	○
Presentation						
Automatic column width	○	○	●	●	○	○
Justify numeric data	○	○	●	●	●	●
Variable row height	●	●	●	●	○	●
Restrict cell entry to text	○	●	●	●	●	○
User-definable formats	○	○	●	○	◒ [14]	●
			BEST BUY			

	1-2-3 release 2.3 [1]	1-2-3 release 3.1+	Excel 3.0 W [2]	Quattro Pro 3.0 [3]	SuperCalc5.0[4]	Wingz 1.1A W
Presentation (continued)						
Copy formatting to another cell	●	●	●	○	○	●
Mousable WYSIWYG interface	●	●	●	●	○	●
Zoom	●	●	●	●	○	●
Text boxes	●	●	●	○	○	●
Save named reports	○	●	●	○	○	○
Set attributes independent of font	●	●	●	○	○	●
Formatting styles	●	●	●	○	○	○
Auto-compress print range	●	●	●	●	○	○
Print multiple ranges per page	●	●	●	◒[15]	●	○
WYSIWYG page preview	●	●	●	●	○	●
Display print range border	●	●	●	◒[16]	○	●
Draw within graphic	●	●	●	●	○	●
Draw on spreadsheet	○	○	●	○	○	●
Dual y-axes	○	●	●	●	●	●
Mixed graphs (line/bar)	●	●	●	●	●	●
True 3-D graphs	○	○	●	◒[17]	●	●
On-screen slide show	○	○	●	●	○	○
Number of graph variables	6	6	255	6	10	▼
Data management						
Data entry forms	○	●	●	○	○	○
Extract records from closed file	○	●	●	●	○	○
Relational queries	○	●	●	○	○	○
Calculated query fields	○	●	●	○	○	○
External data base links	○	●	●[18]	●[9]	○	◒[11]
Programmability						
Macro library	●	●	●	●	●	●
Execute macro with mouse button	○	○	●	●	○	●
DOS command access from macro	●	●	●	●	○	●
Debugger/trace	●	○	●	●	●	●
Reads/writes 1-2-3 2.2 macros	●	●	●	●	○	○
Service and support						
Daily support (hours)	24	24	12	11	10	8
Unlimited free support	●	●	●	●	○	●
Toll-free support number	◒[19]	◒[19]	●	○	○	●
Weekend support	●	●	●	○	○	●
BBS support	●	●	●	●	○	○
Fax support	●	●	●	●	●	○
Other extra-cost training or support	●	●	●	●	●	○
			BEST BUY			

W Indicates Windows product.
[1] 1-2-3 2.xx won a World Class Award in October 1989 and October 1990.
[2] Excel 2.1 won a Best Buy in October 1989.
[3] Quattro Pro 1.0 won a Best Buy in April 1990.
[4] For character mode; 512K required for WYSIWYG.
[5] Character mode display only.
[6] Shift cells right only; can't shift cells down.
[7] Cell notes only.
[8] Timed only; no on-demand refresh.
[9] Paradox only.
[10] Quadratic curve only; fit in graphs only.
[11] Extra-cost option.
[12] Requires translation utility.
[13] Reads only.
[14] Highly restricted selection of formats.
[15] Not on PostScript printer.
[16] In preview only; not in interactive edit mode.
[17] Line, bar only.
[18] DBF and SQL via Q+E only.
[19] Three months from first call only.

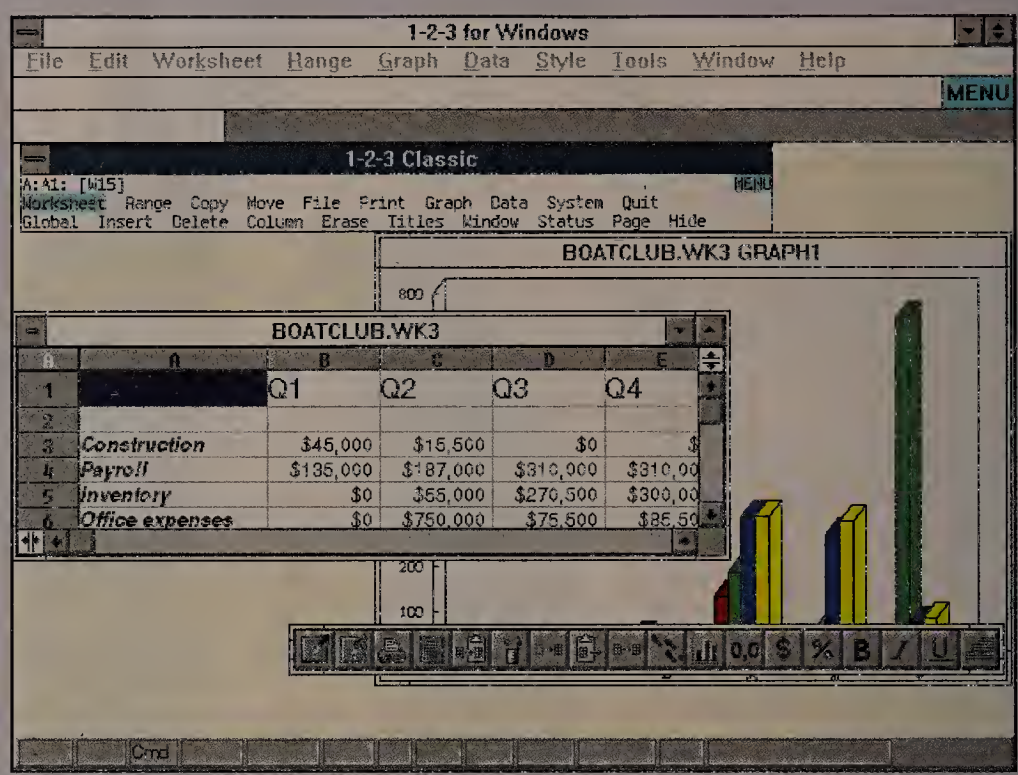
1-2-3 for Windows: Same as It Ever Was

Want the power of *1-2-3 3.1+* combined with the fluid interface of *Excel*? Then take a look at *1-2-3 for Windows*, an icon-studded jewel of a spreadsheet that also helps out old-time *1-2-3* veterans by providing optional slash-key menus.

Last month we took a good long look at a beta version of *1-2-3/W*, but at last report the shipping version wasn't due until late summer. If you're waffling between moving to *Excel* and waiting for *1-2-3/W*, that doesn't do you much good. But here's a hint of what you can expect.

1-2-3 for Windows provides all the features of *1-2-3* release 3.1+—including 3-D worksheets and a nonlinear solver—dressed up with a stunning *Windows* interface. The highlight is a customizable icon palette that makes *Excel's* static tool bar look somewhat dowdy. You can put as many as 70 icons in the palette or display just a few, and you can resize the rectangular palette and float it anywhere on screen. The icons provide one-click access to various formatting and calculation functions—in fact, you can tie any menu item or macro to an icon.

If the icon palette provides the flash, *1-2-3/W's* 1-2-3 Classic menus deliver the slash. These optional menus let you use your old slash-key commands—and the macros that depend on them—so you don't have to master *1-2-3/W's* new interface right away. The result: instant productivity for *1-2-3* users moving to *Windows*.



1-2-3 for Windows' Classic menu provides an entree for veteran users, but the new "icon palette" is the interface of the hour.

Beyond WYSIWYG

Like *1-2-3/W*, the two new character-based versions of *1-2-3* reviewed here are WYSIWYG, letting you view formatting and graphics as they'll print—and without having to switch to a static print preview. But *1-2-3/W* is clearly in another league. For example, gone are *3.1+* and *2.3's* labyrinthine menus, schizoid print commands, and patchwork add-ins. They're replaced by a cleanly integrated system of pulldown menus, dialog boxes, and icons.

The interface itself just looks and feels better. Lotus did a fairly good job on the *3.1+* and 2.3 interfaces, but when you set them side by side with *1-2-3/W* or *Excel*, the fonts, borders, and shading look blocky and immature. Also, dialog boxes are few and far between and lack the *Windows* tricks found in *1-2-3/W*—3-D radio buttons, scroll bars, and drop-down pick lists, for example.

Of course, this is more than a beauty contest—all those pleasing screen objects are also valuable tools that can greatly reduce the time and effort required to generate stylish reports. And thanks to *Windows'* consistent interface, once you learn *1-2-3/W*, learning other *Windows* applications will be much easier. Additional *Windows* benefits include quick access to fonts, top-notch printer support, multitasking, and data sharing between programs.

1-2-3/W may be an improvement over other versions of *1-2-3*, but can it top *Excel*? The answer to that question awaits a shipping version, but the initial impression is that *Excel* has a slight edge on ease of use. *1-2-3/W's* icon palette is a great timesaver, but even more important may be *Excel's* numerous shortcuts, including the ability to open a dialog box just by double-clicking on a screen object such as a chart. And features like *Excel's* outliner and auto-consolidation can also save you a lot of time and aggravation.

Still, *1-2-3/W's* trump card is its 1-2-3 Classic menus. The allure of switching effortlessly between the new interface and the old slash-key commands will be hard to resist.

1-2-3 release 3.1+

PROS: 3-D and multipage worksheets, powerful data base features
CONS: Complex menu structure

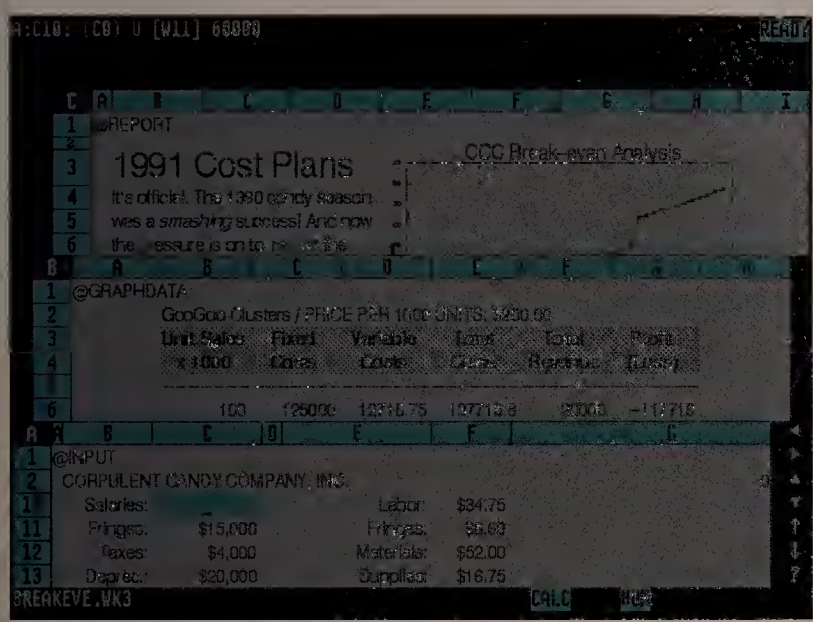
If you're attached to *1-2-3* but your worksheets are starting to outgrow it, check out the powerhouse release 3.1+. This new "+" release consists of a set of add-ins to *3.1:* the auditor and the file viewer from *2.3* and the solver from the OS/2-based *1-2-3/G.*

Developers, analysts, and technical users will appreciate the multipage worksheets, 3-D modeling, refined data base and file linking, and nonlinear solver. Controlling all that power is a distinct challenge, however—it's easy to lose yourself in the endlessly branching menus. Still, *3.1+* is a good value if you demand advanced features.

1-2-3 3.1+'s graphical interface is almost identical to *2.3*'s, but because there are more features, each is harder to find. As with *2.3,* the menus split into traditional *1-2-3* menus and a separate set of publishing menus. The good news: Release 2.*x* users can get started easily, then explore the new menus later. The bad news: Exploring the profusely branching menus may be more of an adventure than you had in mind.

Budget builders will enjoy plenty of power, including multipage worksheets and versatile interfile formula links. Analysts can work with a powerful nonlinear solver and build 3-D data models, but they won't find 3-D graphs among the wide selection of chart types. Developers will revel in the rich relational data base system, which offers links to external data bases, macro-driven data entry forms, and screen painting.

If you're a *1-2-3* aficionado who requires top-notch analytical tools, you'll crave *1-2-3 3.1+*'s cornucopia of nifty new gadgets. But if you're a busy business user who just wants to get the job done, check out *Excel.*



The powerful 1-2-3 release 3.1+ is a whiz at linking multiple worksheets.

Excel 3.0

PROS: Easy interface, outliner, potent solver and data base features
CONS: No multipage worksheets

BEST BUY

WINDOWS Forget your mixed impressions of earlier versions of Microsoft's *Excel.* Version 3.0 deserves another look even if you weren't planning on moving to *Windows.* The program combines impressive analytical and data handling features, full programmability, and dazzling presentation skills. But the real story behind *Excel*'s Best Buy victory is its utterly intuitive interface.

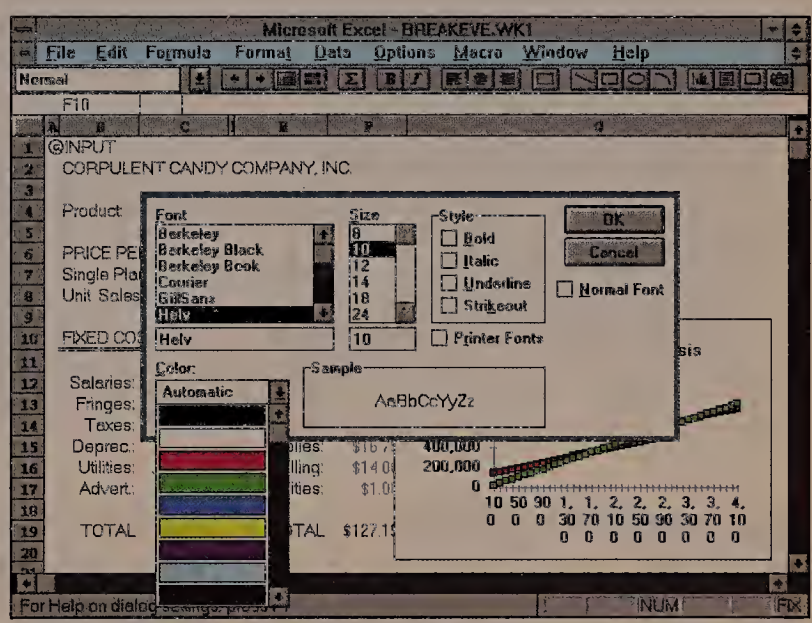
Excel is easy to learn and phenomenally easy to use. You'll seldom grope for the controls—often you can double-click on an object to make the dialog box that controls it appear. *Excel*'s hot keys, tool bar, formatting styles, and other concessions to the frailties of human memory will save you a lot of time.

Excel's automatic file consolidation, based on row and column labels rather than cell addresses, is a magical solution to the budget builder's age-old problem of summarizing data from multiple worksheets. You can build formulas or charts that utilize ranges in other files, so you won't run out of gas when your budget grows complex.

Analysts can use *Excel*'s robust solver to find optimal solutions to complex scenarios, then graph the results. Engineers and scientists may wish for 3-D ranges, however, as well as a few more graph types.

After mastering *Excel*'s thorny macro language, developers can devise efficient multifile applications. A dialog box editor and beefed-up data base commands help make *Excel* the best development environment of the group. Better yet, Microsoft bundles *Q+E,* which offers fully relational links to *dBASE, Paradox,* and other data bases.

Excel demands power: at least a 286 with 2MB of RAM. But if your hardware is up to it, *Excel* is too. It's the Best Buy for just about everybody.



Excel 3.0's icon bar provides quick access to common features such as font selection.

What's Your Line?

A spreadsheet is a spreadsheet, right? Wrong. It may also be a data manager, a desktop publisher, a graphics program, a project manager, or a statistics application. What type of user are you? We've highlighted five typical groups of spreadsheet users below and point you to the features—and programs—you'll want. We've also indicated the tests that you should focus on in the PC World Test Report.

Managers

This is by far the largest category of spreadsheet users. It includes casual users who use a spreadsheet as a scratch pad, text-oriented users who want a spreadsheet for table layout features, executives who want to automate their expense reports, and administrators who maintain small departmental budgets or prepare simple reports. Ease of use and spreadsheet publishing are critical.
Key features: WYSIWYG interface, formatting styles, print preview, auto-compress print range, automatic column width
Key tests: arithmetic model
Recommendation: *Excel, Quattro Pro*

Corporate Budget Makers

Budgeting often involves collecting data from several departments (or from all over the company) and reducing it in successive stages to form a coherent financial picture. Speed and organizational features are the main buying issues.
Key features: auto-consolidation; movable, sizable windows; work space save; point-and-shoot formula linking; multipage worksheets; outliner; 3-D ranges; speed
Key tests: consolidation model
Recommendation: *Excel, 1-2-3 3.1+, Quattro Pro*

Financial Analysts and Forecasters

These spreadsheet jockeys play the what-if game in a big way. They build complex formulas, so recalculation speed is important. They want to display results graphically, and hardware costs are not an issue.
Key features: nonlinear solver, linear regression, user-definable functions, many graph types and variables, speed
Key tests: financial model
Recommendation: *Excel, 1-2-3 3.1+*

Scientific and Technical Users

Engineers, scientists, and technical users of all types store empirical data, perform statistical analyses, build complex graphs, and prepare complex mathematical models.
Key features: nonlinear solver, linear regression, many graphic types, arrays, relational queries, speed
Key tests: scientific model
Recommendation: *Excel, 1-2-3 3.1+*

Application Developers

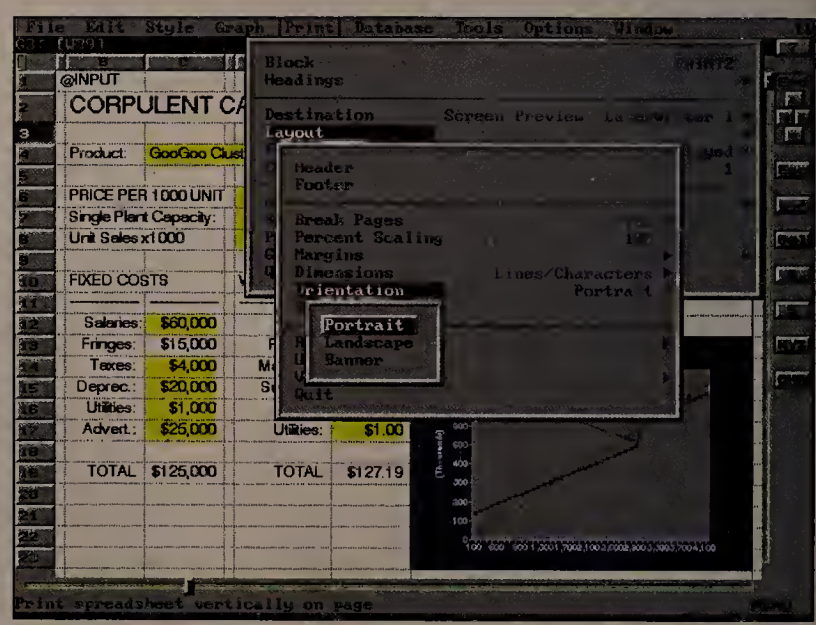
Developers build worksheets for others to use. They need good programming features, and a WYSIWYG interface helps them create attractive, custom input screens. Since many custom applications are for data collection, data base features are important, and compatibility with a variety of data types helps to port applications between programs.
Key features: macro library and debugger, mouse-button macros, WYSIWYG interface, external file links, file and macro compatibility
Key tests: arithmetic model
Recommendation: *Excel, Quattro Pro*

Quattro Pro 3.0

PROS: Fast, runs on 8088 PCs, excellent graphics, full compatibility with 1-2-3 2.2
CONS: Lacks format styles, can't resize windows in new graphical mode

If you're frustrated with *1-2-3*'s menus, if you often create graphics, or if you need hot links to *Paradox*, consider Borland's *Quattro Pro 3.0* It provides superb graphs, solid desktop publishing features, and a flashy new interface. It's a good value, but the lack of formatting styles and other shortcuts keeps it from the top.

Quattro's optional new graphical interface (you can switch back to the mousable character mode) looks sharp enough, but it's somewhat harder to work with than the *1-2-3* versions reviewed: As with the *1-2-3*s (but unlike *Quattro Pro*'s character mode), you can't move or resize

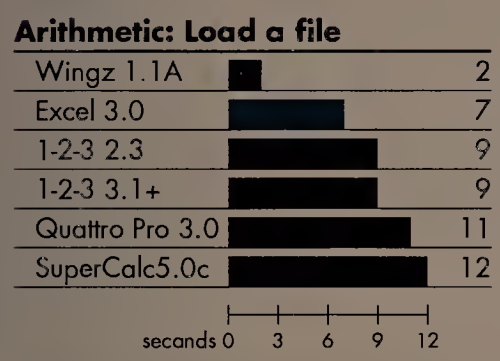


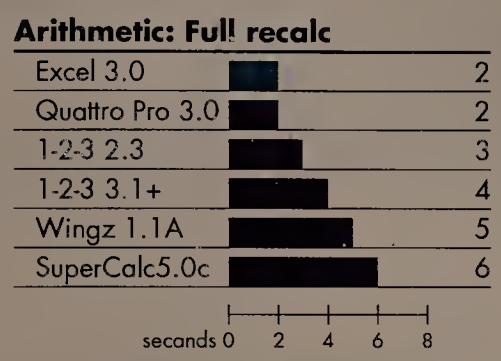
Graphics make Quattro the top choice in non-Windows spreadsheets.

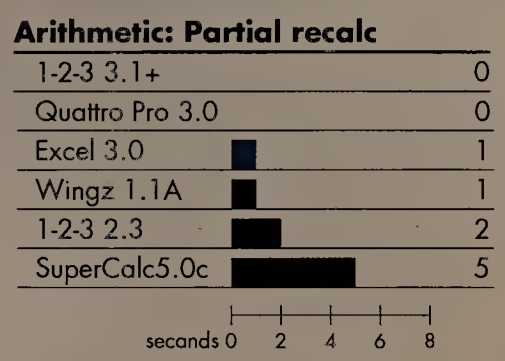
Photo Finish at the Top

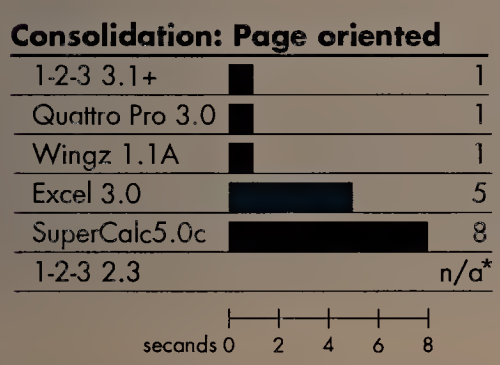
With Excel, Quattro Pro, Wingz, and both versions of 1-2-3 all making strong showings in the speed department, factors like ease of use and specific abilities become the key buying issues.

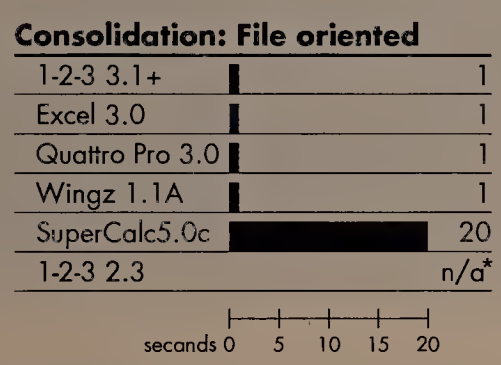
■ Best Buy

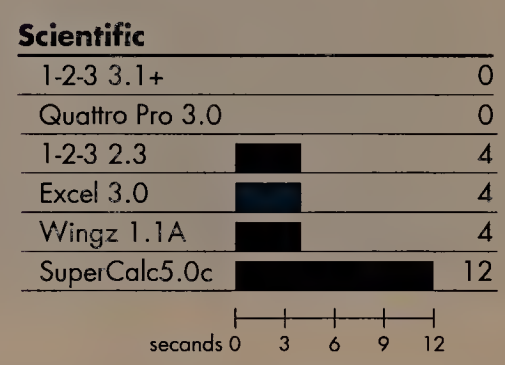


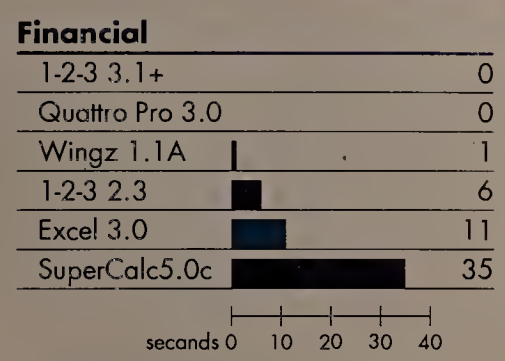












* 1-2-3 2.3 can't have multiple worksheets in RAM.

Methodology
We ran our tests on a Compaq 386/25 with 4MB RAM and a 110MB hard disk and used background-recalc mode where possible.

Financial
We run recalcs on a 360-month variable-rate loan.

Arithmetic
We load a worksheet with 253 months of assets and liabilities and do a full and a partial recalc. In the latter, only the affected cells recalculate.

Consolidation: Page oriented
We place the overall totals of ten worksheets in an eleventh and measure recalc time.

Consolidation: File oriented
We pull values from seven worksheets loaded in RAM and consolidate them in an eighth.

Scientific
We construct a 37-by-37-cell dual-variable distribution matrix and define the maximum and minimum values for both variables. We give a correlation coefficient, change it, and measure recalc time.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

windows. Nor can you view the boundaries of print ranges in the interactive editing mode. Also, the screen refresh is slow (though that problem should be solved in version 3.01). The graphical mode may be a bit sluggish, but behind the scenes *Quattro* is the fastest program in the roundup on a 386 PC.

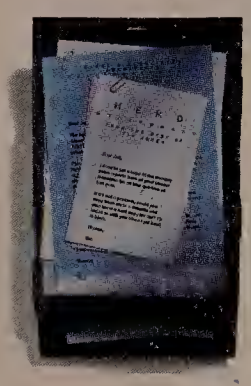
Scratch the surface beneath the graphical interface, and *Quattro*'s logical menus are easier to learn than *1-2-3*'s menus, where unrelated commands congregrate too often. *Quattro* also has you create <Ctrl>-key combinations that can skip several levels deep in the menu tree to oft-used commands. For reporting, the program shares *1-2-3*'s excellent fit-to-print option, which helps you print large ranges on a single page. But *Quattro* lacks *1-2-3*'s formatting styles, report templates, and multiple range selection, which can make report creation tedious at times.

Graphics are *Quattro*'s forte: You can choose from a variety of graphs and enhance them with superb drawing tools. You can export images to 35mm slides or assemble an on-screen slide show complete with wipes, dissolves, hypertext links—even sound effects.

Budgeteers will find the file linking equal to *Excel*'s: You can have multiple files share data through linked formulas, and save those files as a group. Analysts will appreciate the graphics, but they'll probably give up on the solver, which lacks nonlinear solutions and assails you with complex math lingo.

If you have an 8088 or low-end 286 machine, your choice is probably between *1-2-3 2.3* and *Quattro Pro*. The decision is not as clear as it was prior to release 2.3, but *Quattro* is still the way to go, especially if you use *Paradox* and if you frequently create graphics.

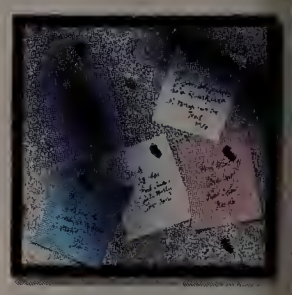
Now that it's such a popular E-mail program, maybe we should call it Post Office.



When WordPerfect Corporation created WordPerfect Office,™ we set out to simplify the way people organize their days, schedule their meetings and communicate with their colleagues. In short, to streamline many of the most common day-to-day tasks in any office environment. And that's exactly what WordPerfect Office can do.

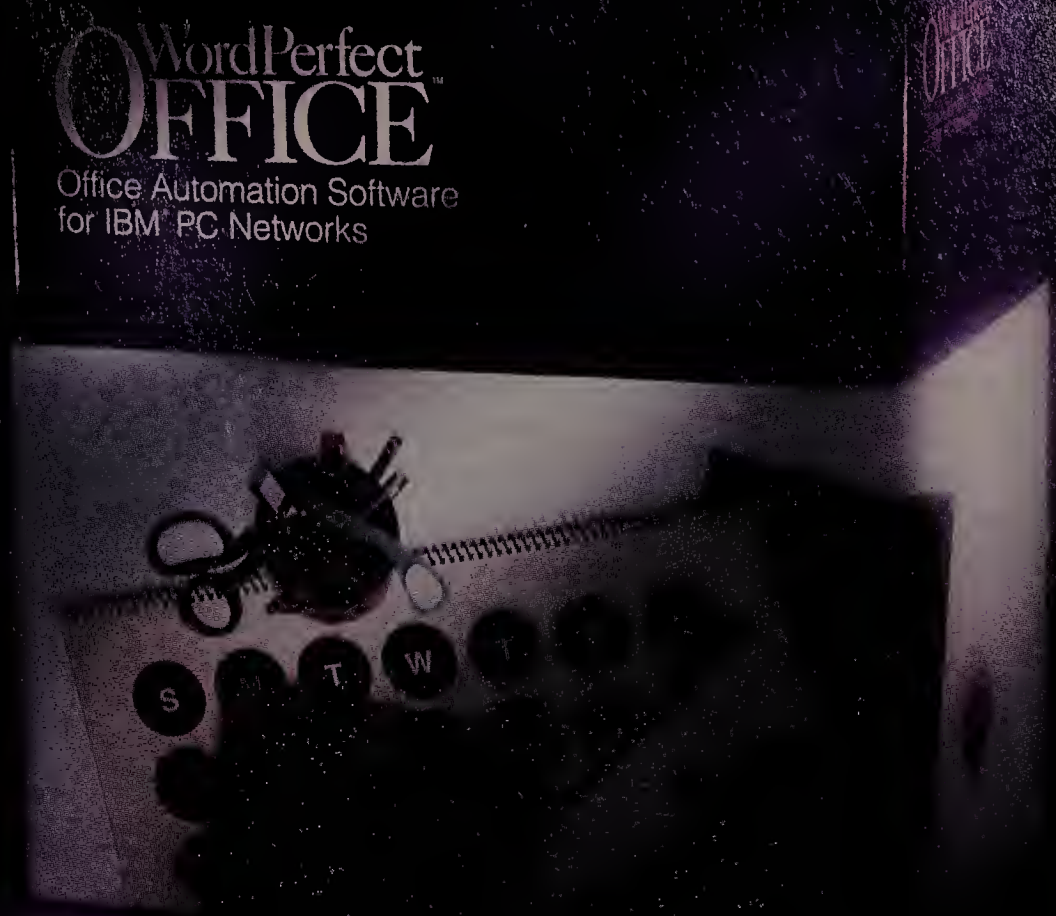
But meanwhile, it's also become the fastest-growing E-mail package for PCs.

And that seems only natural. Because WordPerfect Office lets you quickly and easily send documents, memos and schedules to the "in-boxes" of everyone on your mailing list—across the hall, across the street, wherever they're connected to WordPerfect Office.

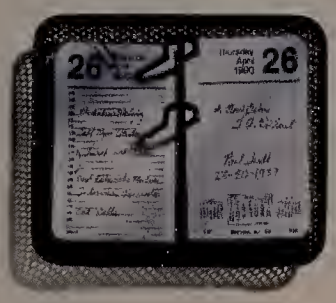


Plus, WordPerfect Office has gateways that allow you to communicate with many other kinds of E-mail systems—MCI, AT&T Easylink and MHS, for instance.

And unlike most E-mail packages, WordPerfect Office organizes your messages in "in-boxes" and "out-boxes" and lets you check their status anytime. I you've sent a message that has not yet been read, for example, you can retrieve it and make changes. You can even delete the message completely, as though it had never been sent.



So why didn't we call it "Post Office"? Because rdPerfect Office isn't limited to just E-mail. rdPerfect Office includes such useful functions as alendar, a calculator, and a file manager. And its eduler program lets you coordinate and schedule ple and resources iciently, avoiding conflicts d endless back-and-forth ephone tag.

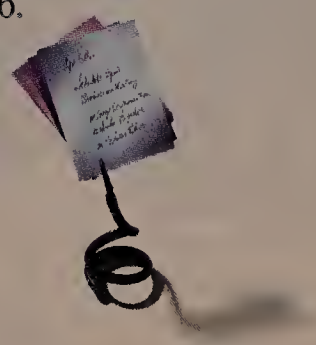


What's more, you can nt on WordPerfect Office have all the familiarity, ease-of-use and comparable user support you've come to enjoy in rdPerfect.®

Maybe it's because WordPerfect Office can do many things so well that *InfoWorld* chose it as "Office Automation Product of the Year for 1990."

So if you want the PC's fastest-growing E-mail package—and you don't mind getting some really great additional features—just call (800)-526-5031 for a free demo diskette or a WordPerfect Office brochure. Or, if you prefer, send a message to MCI 4478847 or AT&T Easylink 62024736.

You'll not only be getting a better post office, you'll be getting a better office.



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CORPORATION

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SuperCalc5.0c

PROS: Low price, flexible editing, multipage worksheets, statistical graphics.
CONS: Slow; awkward interface; no preview; no solver

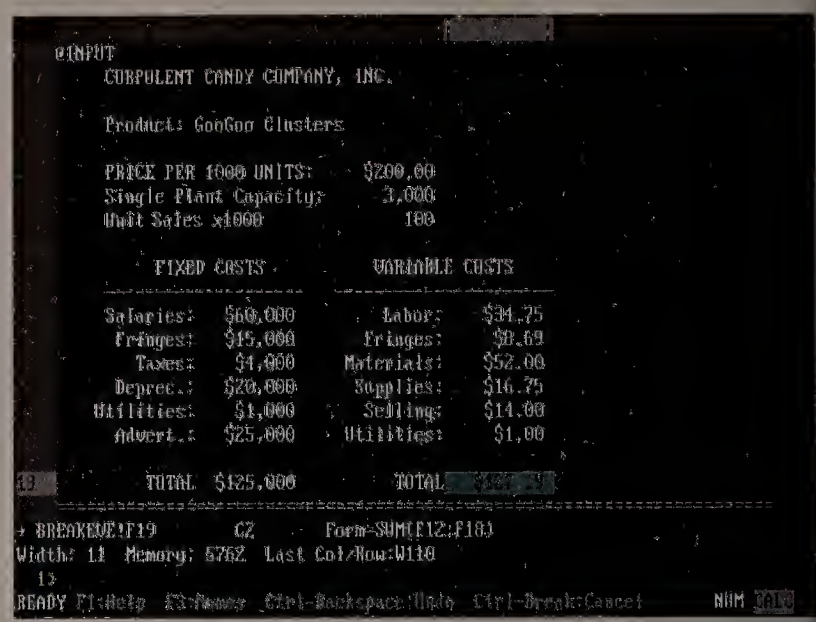
In present company, Computer Associates' *SuperCalc5.0c* is a bit of a relic. Its character-based interface lacks on-screen graphics and print preview, its publishing skills are negligible, it has no solver, and its file linking is limited. It's also the slowest performer in the pack. A rock-bottom $149 price tag is alluring, but *SuperCalc* is still only a fair value. Its only real niche: bargain hunters who have an 8088 or low-end 286 PC but want top-notch statistical features and multipage worksheets.

It's fairly easy to do basic editing in *SuperCalc*—you can sort by columns or rows and copy cells with or without formula adjustment—but beyond that you'll bog down. The overwhelming menu system derives from the *1-2-3* tree model, but it's even more confusing. You get basic publishing features such as cell borders, shading, and multiple fonts, but the lack of a WYSIWYG interface or even a print preview makes them difficult to use.

Budget specialists will be frustrated by *SuperCalc*'s linking system, which lets you construct a multipage worksheet, but won't let you build 3-D ranges. You can construct formulas that link to another page or file, but you must type in the external range addresses or names from memory.

On the plus side, analysts and technical users will like *SuperCalc*'s graphs, which offer polar coordinates and curve fitting. The program also earns high marks at statistical analysis and graphics, such as linear, quadratic, and cubic regression.

Fortunately, an overhaul of *SuperCalc* is in the works. Until then, unless you have a special need for *SuperCalc*'s statistical talents, look elsewhere.



Once upon a time, all spreadsheets looked like this. SuperCalc5.0c remains true to the old character-based approach.

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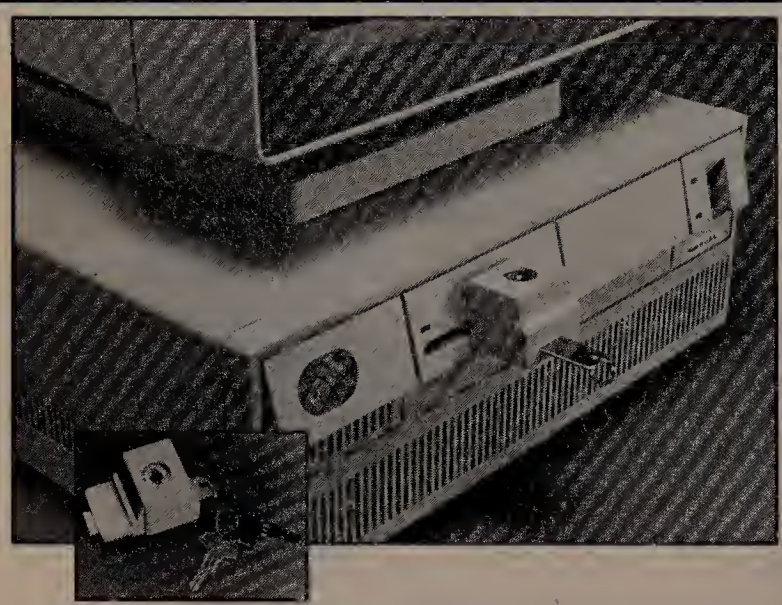

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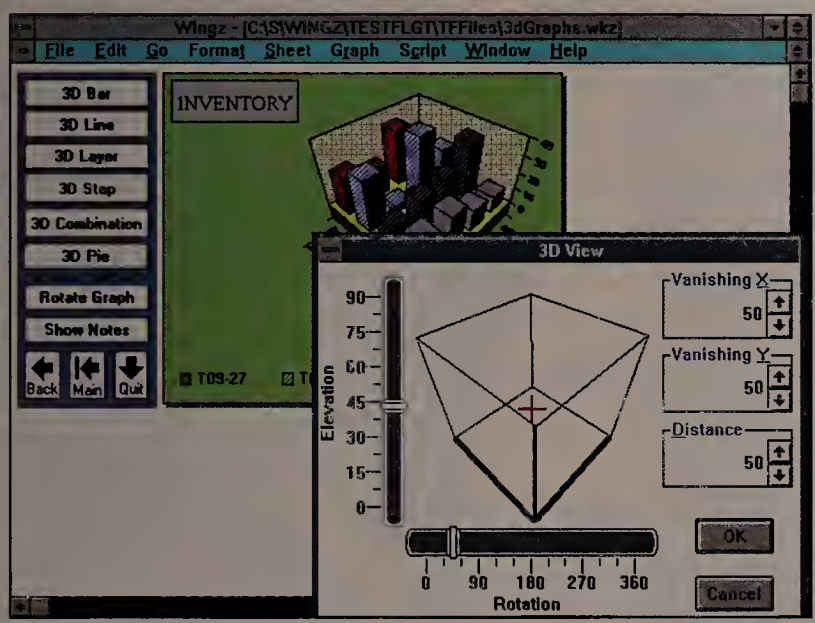
Wingz 1.1A

PROS: Superb graphics, highly programmable
CONS: Weak file linking, few shortcuts, limited data base features

WINDOWS *Wingz* is a great idea that never quite took off. Concentrating on presentation, it includes a draw program and a spectacular lineup of graphs. It's a fairly good value if you churn out a lot of graphics, but its relatively weak mainstream spreadsheet features make it look immature next to its *Windows* rival *Excel.*

As in *Excel,* you can draw directly on the worksheet and insert notes in text boxes, but you'll be slowed by the lack of formatting styles and keyboard shortcuts, and a general overreliance on the mouse. For instance, to paste a range name in a formula, you must make two menu choices, click a radio button, select a name from a list, and click on *OK.* Printing requires a lot of trial and error—you can't see page breaks or auto-compress a report to a single page.



If you hate to remove your hand from the mouse, you'll love Wingz. Sliding bar controls provide access to superb graphics.

Wingz's weak file linking skills make complex budgets a chore. You can't use the mouse to build a linking formula, and the program links work only when both files are open. Analysts will like the regression and matrix commands but will have to do without a solver.

If you're a BASIC or dBASE programmer, you'll feel right at home in *Wingz*'s BASIC-like Hyperscript language. But developers should be wary of the limited data base talents and poor *1-2-3* compatibility.

You may forgive *Wingz* its shortcomings in order to savor its superb graphics. You get fantastic 3-D graphs, including polar coordinates and surface and contour charts.

Wingz will satisfy business graphics fans, but spreadsheet jockeys will find it disappointing. Most *Windows* users should choose *Excel* instead.

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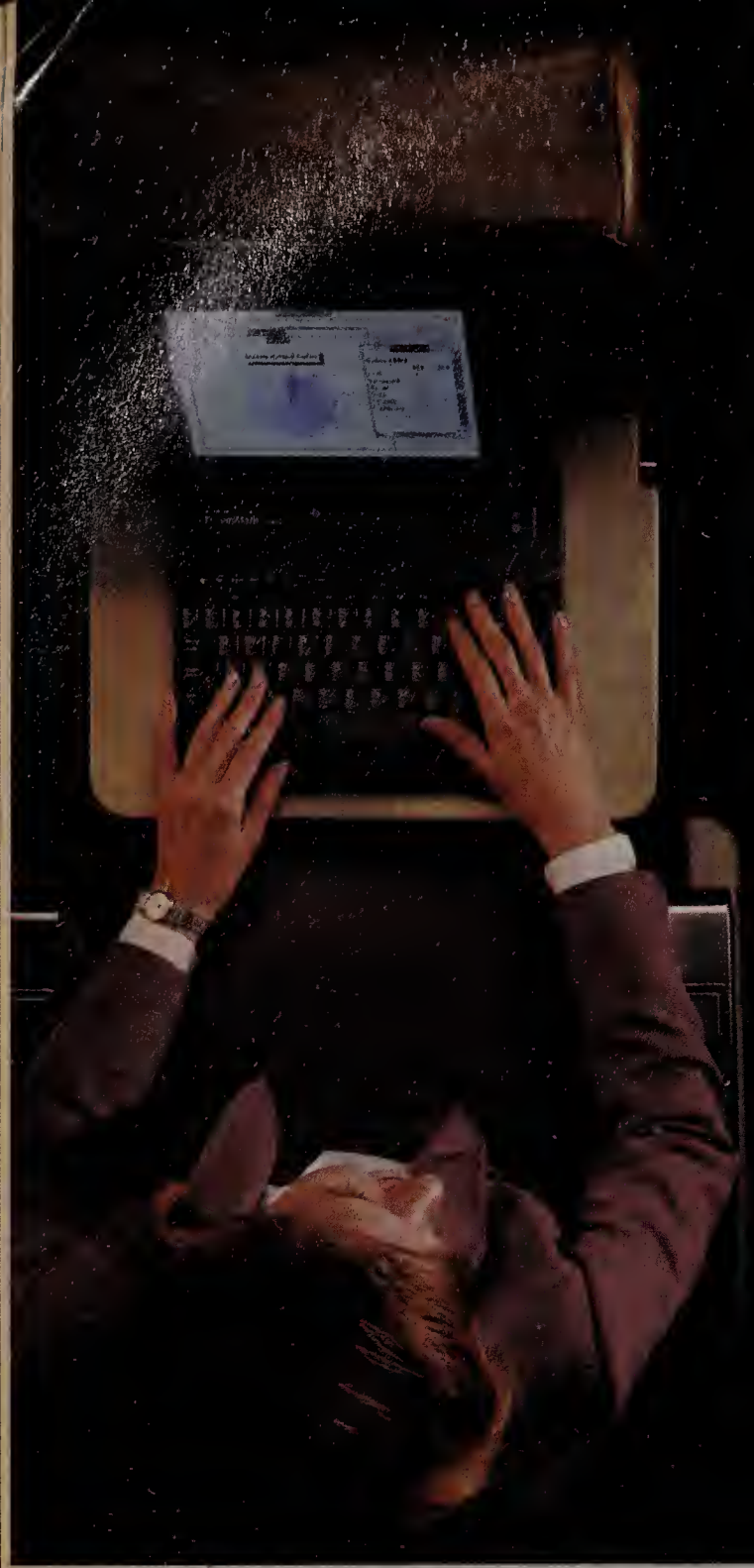

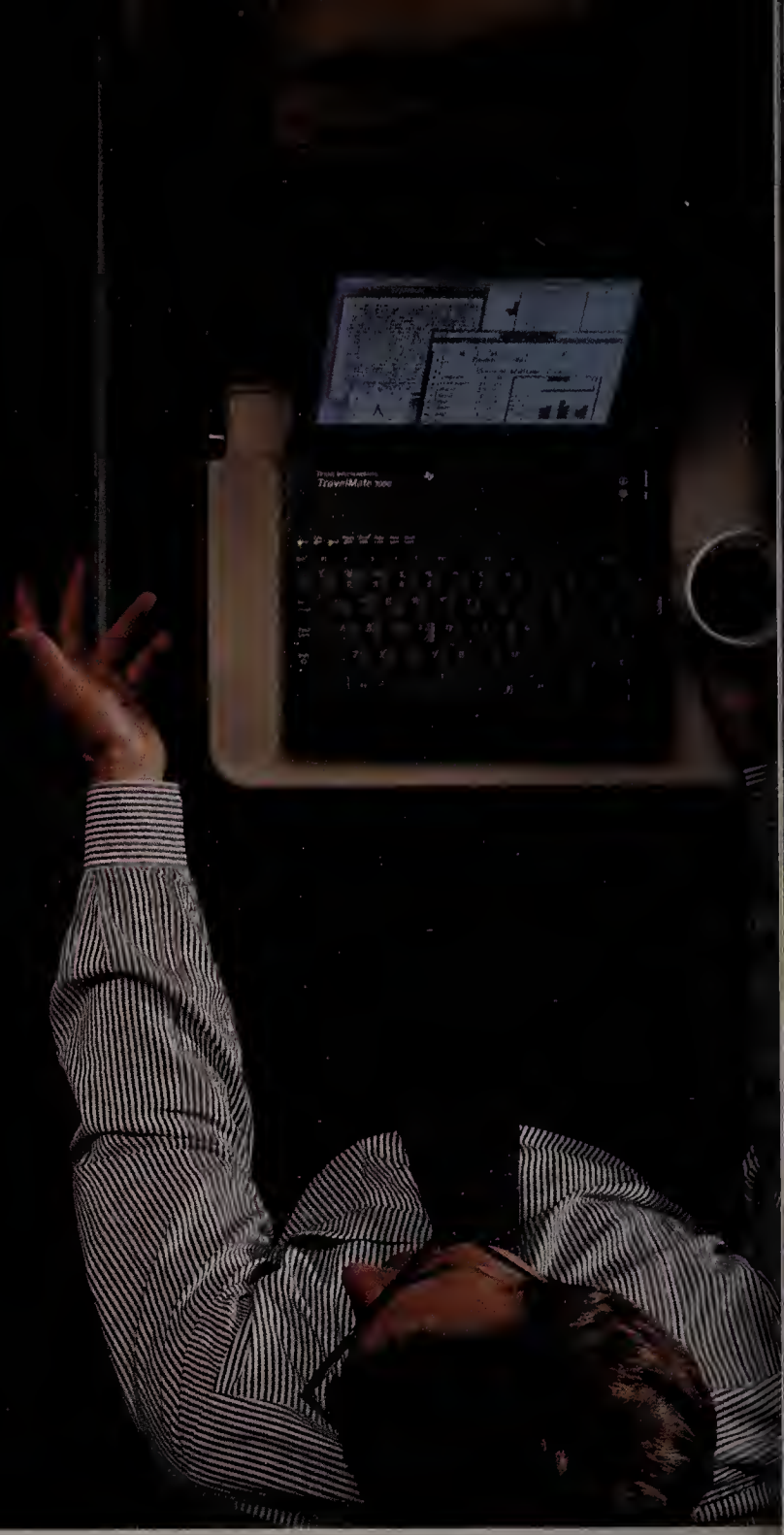

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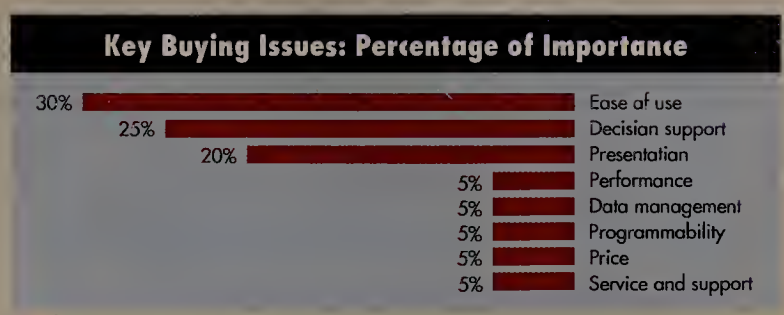
EXECUTIVE SUMMARY

Excel 3.0: The Best There Is

Excel delivers spreadsheet muscle in a remarkably easy-to-use interface.

BEST BUY

Excel 3.0 wins a Best Buy thanks to a gracious interface matched with dynamite features. Its auto-consolidation and outliner represent significant spreadsheet innovations, and it has the best presentation skills in the roundup. No Windows for you? Try **Quattro Pro** or the more advanced **1-2-3 3.1+**. The latest release of **1-2-3 2.3** adds a graphical interface to keep up-to-date, but **Quattro** is still the best of the low-end packages.



Excellent ★★★★
Good ★★★
Fair ★★
Poor ★

	Reader service no.	Ease of use	Decision support	Presentation	Performance	Data management	Programmability	Price	Service and support	Overall value
Excel 3.0	679	★★★★	★★★★	★★★★	★★½	★★★★	★★★★	★★★	★★★	★★★★
1-2-3 release 3.1+	678	☆☆	☆☆☆☆	☆☆☆	☆☆☆½	☆☆☆☆	☆☆☆½	☆☆	☆½	★★★
Quattro Pro 3.0	680	☆☆☆	☆☆½	☆☆☆½	☆☆☆☆	☆☆	☆☆☆½	☆☆☆	☆☆☆	★★★
1-2-3 release 2.3	677	☆☆½	☆☆	☆☆☆	☆☆½	½	☆☆☆½	☆☆☆	☆½	★★½
Wingz 1.1A	682	☆☆	☆☆½	☆☆☆½	☆☆☆☆	½	☆☆☆½	☆☆☆	☆☆☆½	★★½
SuperCalc5.0c	681	☆½	☆☆☆	☆☆	½	☆½	☆☆☆½	☆☆☆☆	☆☆☆	★★

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

WHERE TO BUY

1-2-3 release 2.3
Lotus Development Corp.
55 Cambridge Pkwy.
Cambridge, MA 02142
617/577-8500
LIST PRICE: $495
Reader service no. 677

1-2-3 release 3.1+
LIST PRICE: $595
Reader service no. 678

Excel 3.0
Microsoft Corp.
One Microsoft Way
Redmond, WA 98052
800/426-9400,
206/883-8101 (fax)
LIST PRICE: $495
Reader service no. 679

Quattro Pro 3.0
Borland Int'l
1800 Green Hills Rd.
P.O. Box 660001
Scotts Valley, CA 95067-0001
800/331-0877,
408/438-8400
LIST PRICE: $495
Reader service no. 680

SuperCalc5.0c
Computer Associates Int'l Inc.
1240 McKay Dr.
San Jose, CA 95131
800/531-5236
LIST PRICE: $149
Reader service no. 681

Wingz 1.1A
Informix Software, Inc.
16011 College Blvd.
Lenexa, KS 66219
800/331-1763
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Jochen Tschunke
Chairman, Computer 2000

Peter Bonfield
Chairman & CEO, ICL plc

Georges Cassir
Director of Channels, Digital Europe

Pierre Hessler
Director General, Marketing & Operations, IBM Europe

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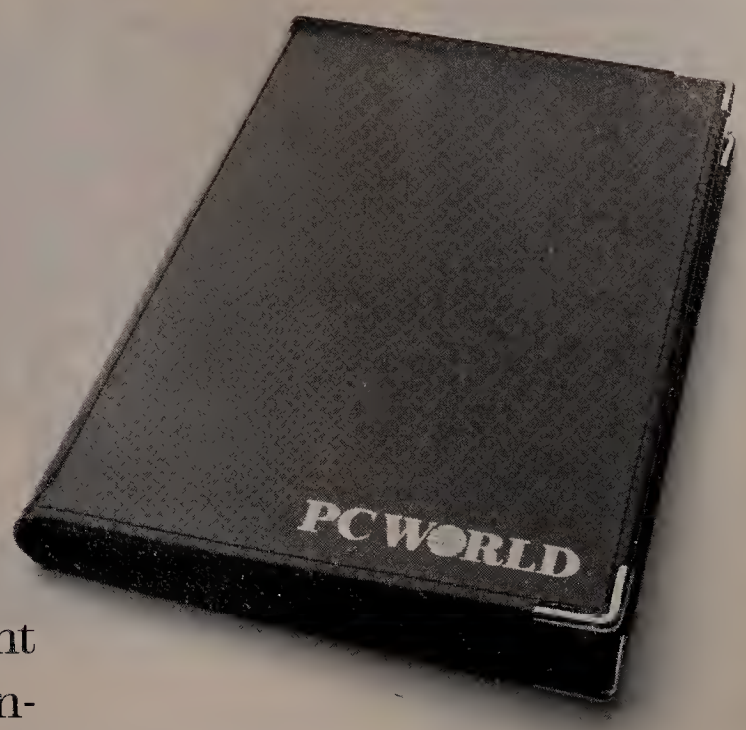

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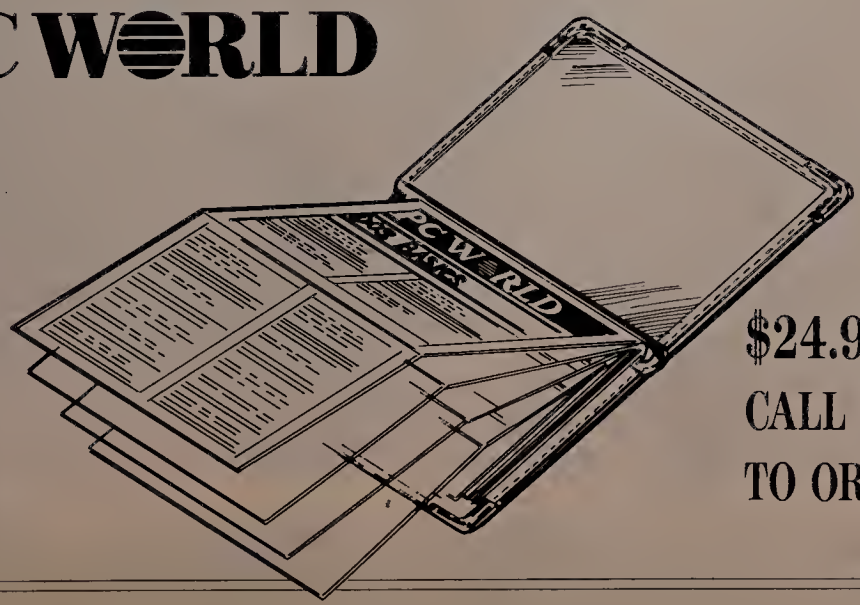

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Getting the E-Mail Message

Still not using E-mail? Find out which of the E-mail leaders make sending and managing messages a snap.

Robert Lauriston

GORDON STUDER

If you're not using electronic mail, you're not using your local area network to full advantage. In fact, if you don't have a LAN, E-mail is probably reason enough to install one.

E-mail combines the precision of a typed letter with the immediacy of a phone call. Consider how you normally distribute information in your company. You type a memo in your word processor, print it out, distribute copies among the recipients' in-boxes, and store copies in the filing cabinet. With E-mail, once you've typed your message, you're practically done—all that's left is to select the addressees and save a copy to an electronic "folder."

Best of all, E-mail means fewer meetings. You can broadcast information to coworkers and reach group decisions by exchanging messages. For meetings you can't avoid, many E-mail packages provide group scheduling utilities, which help you find a convenient time and place to meet and keep track of things like conference rooms.

E-mail doesn't stop at the office door, either. The top packages allow you to keep in touch with people on LANs in your company's other offices, telecommuters working at home, and laptop-toting employees in the field. You can hook into mail systems running on other platforms, from the minicomputer in the accounting department to the Macintoshes over in marketing. You'll be able to send and receive faxes from your workstation or tap into on-line services like CompuServe and MCI Mail. And with Novell's Message Handling Service (MHS), you may even be able to exchange mail between different office E-mail systems (see the sidebar "MHS: Mix-and-Match E-Mail").

The E-Mail Mystique

We took a look at seven of the top-selling office E-mail programs. All of them work on Novell NetWare and other common network operating systems, and most offer all the benefits outlined above. Three of the programs come in both DOS and *Windows* versions, which you can install and run on the same LAN.

Best Buy *cc:Mail* is the postal service of choice. It does the best job of linking E-mail to the world, and its scheduler option handles group scheduling tasks with aplomb. Close contender *Da Vinci eMail* is the easiest program to use, but it doesn't give you folders—the essential tool for organizing your messages. *Microsoft Mail for PC Networks* matches *cc:Mail* for message handling but lacks the connectivity options many users will need.

E-mail is rapidly changing the way we work. And with group scheduling now an expected part of a well-rounded package, E-mail is becoming the primary shared application for busy offices. Once you begin to use E-mail, you may begin to wonder how you ever got along without it.

Robert Lauriston is a contributing editor for PC World.

cc:Mail

PROS: Broad connectivity, built-in fax viewer, archive utility

CONS: Can't sort folders, scheduler not integrated with mail, limited Windows version

WINDOWS Lotus's *cc:Mail for DOS 3.2* and its *Windows* version 1.0 offer everything you need in messaging, mail management, and connectivity. Intelligent menu organization makes both DOS and *Windows* versions a breeze to learn and use. It's clearly a Best Buy.

Sending a *cc:Mail* message is easier than addressing an envelope and licking a stamp. A memory-resident version lets you send and receive mail from any DOS app, though you can't access messages in folders.

The DOS version's message management skills are tops. You can file messages in folders and retrieve them by a wide variety of search criteria, narrowing your selection in successive passes. And *cc:Mail* lets you archive selected messages to disk while preserving all attachments and addresses.

cc:Mail for Windows 1.0 adds the ability to replace the built-in editor with a word processor and to easily view attached files. But a sometimes confusing mix of icons and pulldown menus makes the *Windows* version harder to use, and you can't search across folders or view a list of messages that match your criteria.

cc:Mail for Windows lets you read or compose as many messages as you like, each in its own window.

You can't beat *cc:Mail* for connectivity, and its optional group scheduler (a version of Powercore's *Network Scheduler II*) is well designed. However, it's not integrated directly with E-mail, so you must switch to the scheduler to reply to a message proposing a meeting.

cc:Mail for DOS is the most comprehensive E-mail package you can get. Its *Windows* counterpart, though slightly flawed, is also the best in its class.

Buying Smart: Making the E-Mail Connection

An E-mail system is effective only if everyone uses it—that's why ease of use is your primary consideration. Next in importance are tools for composing and addressing mail and managing your burgeoning in-box.

EASE OF USE

Using E-mail should be easier than sending a traditional interoffice memo. Look for a program that lets you read and send messages without having to exit your main application, either via a pop-up memory-resident option or a context switcher that lets you jump between programs.

MESSAGING

As with paper mail, your E-mail package should provide a complete range of addressing options: copies, blind copies, return receipts, and priority mail to identify and speed delivery of urgent messages. You should be able to easily reply to a message or forward it to the proper recipient. And you'll want to be able to set up both private and shared mailing lists.

All the programs come with passable text editors, but you'll probably want to compose long messages in a word processor, then import the text files. If you use the editor, you'll want to be able to save drafts and view the original message while replying. E-mail is also an easy way to swap files; look for the ability to attach at least a dozen items to a message.

MESSAGE MANAGEMENT

E-mail messages can pile up fast. The crucial feature for managing mail is folders, which let you sort mail into logical categories. Look for global message processing, so you can select several messages and move them to a folder en masse.

Storing messages is only half the battle—you also need to be able to find a message quickly. Look for a program that searches by a variety of criteria—such as name, date, subject, and keywords—and lists the relevant messages by title or subject. The top programs can search across all folders and search message text. Another handy feature is message threading, which puts E-mail into context by displaying the preceding messages.

CONNECTIVITY

E-mail can link your employees whether they're across the hall or across the country. But connectivity options usually cost extra and require a dedicated PC.

If you exchange mail with outside offices, you want LAN-to-LAN links via modem, plus a directory exchange utility to keep the E-mail address lists on all the LANs in sync. Remote access programs are essential for accessing mail from home or on the road. Offices that use a variety of hardware platforms will need links to Macs, minis, and mainframes. For connecting your E-mail system to the rest of the world, look for fax gateways that let you send and receive faxes from your PC, and links to commercial E-mail services such as MCI Mail. And to gain access to the widest range of third-party gateways or other office E-mail systems, MHS support is a must.

ADMINISTRATION

For NetWare administrators, the key feature is the ability to share the LAN's user data base. Otherwise, every change (such as adding or deleting a user) will have to be duplicated manually. Look for programs that don't require a lot of drive mappings or changes to CONFIG.SYS.

GROUP SCHEDULING

Try to arrange a meeting time with a dozen people via E-mail, and you may get back a dozen different suggestions. A good group scheduler helps you quickly sort out who's available and when. The top packages let you select participants, view a bar chart of each person's busy and free times, and suggest a meeting time which all participants can either accept or decline. Ideally, a scheduler will be well integrated with E-mail so you won't have to exit the scheduling module to reply to messages.

SERVICE AND SUPPORT

When you get stuck, there's no substitute for help at the end of a phone line. We called each vendor's tech support lines three times, noting the promptness, accuracy, and completeness of the responses. We also factored in policies such as hours, toll-free lines, and BBS and fax support.

PRICE

Our price ratings are based on average per-user cost for one 10-user, two 25-user, and one 50-user system, the last on two LANs linked by modem. Where available, we factored in the cost of dial-in software for 5 remote users. But your final cost may vary: be sure to consider added changes for any gateways, remote-access programs, or other options.

FEATURES EVALUATION

When You Absolutely, Positively Need E-Mail

Programs such as Best Buy cc:Mail make overnight mail services look like the Pony Express. You can send and receive messages across the office or across the country from the comfort of your keyboard.

● Yes
○ No
◒ Deficient
▼ Limited only by available disk space

	cc:Mail for MS-DOS 3.2 / cc:Mail for Windows 1.0 W	The Coordinator II 2.10	Da Vinci eMail for DOS 1.7 / Da Vinci eMail for Windows 1.8 W	Higgins 2.4	InBox Plus for DOS 3.0	Microsoft Mail for PC Networks 2.1 W	WordPerfect Office 3.0
Standard features							
Average price per user[1]	$55	$111[2]	$48	$97	$45[2]	$102	$90
RAM required	350K[3]/640K[4]	640K	256K	512K	384K	384K[3]/640K[4]	640K
Context-sensitive help	◒[3]	●	◒[3]	●	●	●	●
Recognizes NetWare password	●	◒[5]	◒[5]	◒[5]	○	○	●
Access E-mail without exiting application	◒[6]	○	●	●	○	◒[6]	●
Messaging							
Copies	●	●	●	●	●	●	●
Blind copies	●	○	●	○	●	○	●
Return receipt	●	○	●	●	●	●	●
Forward message	●	●	●	●	●	●	●
Reply to message	●	●	◒[7]	◒[7]	●	●	●
See message while replying	◒[4]	●	●	○	●	◒[4]	●
Public and private mailing lists	●	●	●	●	●	●	●
Import/export ASCII	●	●	●	●	●	●	●
Save drafts	◒[4]	○	◒[3]	●	●	○	○
Multiple windows	◒[4]	○	○	○	●	○	○
Screen capture utility	●	○	○	○	○	●	●
Maximum file attachments	20	1	▼	26	▼	200	100
Priority classifications	3	0	4	2	2	5	3
Message management							
Store mail in folders	●	◒[8]	○	●	●	●	○
Store folders on local drive	●	○	○	○	●	●	○
Shared folders (bulletin boards)	●	○	○	○	○	◒[9]	○
Archive selected messages	●	○	○	○	○	◒[3]	○
Save copies of all mail sent	●	●	●	○	●	●	●
Global processing of mail	●	●	●	○	●	●	●
List messages by:							
sender	◒[3]	◒	◒[10]	●	◒[10]	○	○
subject	◒[3]	○	●	●	●	○	○
date range	◒[3]	◒[11]	●	●	○	○	○
keyword	●	●	○	●	○	○	○
Search across all folders	◒[3]	○	○	◒[12]	○	◒[3]	○
Full-text search	●	○	○	○	○	●	○
Message threading	●	●	◒[13]	●	○	○	○
Sort in-box/folders	◒[14]	◒[15]	○	○	●	●	○
	BEST BUY						

	cc:Mail for MS-DOS 3.2 cc:Mail for Windows 1.0 W	The Coordinator II 2.10	Da Vinci eMail for DOS 1.7 Da Vinci eMail for Windows 1.8 W	Higgins 2.4	InBox Plus for DOS 3.0	Microsoft Mail for PC Networks 2.1 W	WordPerfect Office 3.0
Remote PC access	● [16]	● [16]	●	● [16]	○	○ [17]	○
LAN to LAN	● [16]	●	● [16]	● [16]	○	●	● [16]
Directory exchange	● [16]	○	● [16]	●	○	○	○
MHS	● [16]	●	●	● [16]	○	○ [17]	● [16]
Fax (send and receive)	● [16]	○	● [16]	● [16]	○	○ [17]	○
Macintosh workstations	● [16]	○	○	○	●	○ [17]	○
Links to commercial E-mail	● [16]	○	○	○	○	○	● [16]
Administration							
Share NetWare user and group IDs	●	○	◒ [5]	○	◒ [18]	○	●
Drive mappings required	0	3	0	0	0	1	1
Requires changes to CONFIG.SYS	●	●	○	○	○	○	○
Group scheduling							
Group scheduler	● [16]	◒ [19]	● [16]	●	○	○	●
Suggests conflict-free meeting time	●	○	○	●	○	○	●
Time-conflict bar graph	●	●	●	●	○	○	●
Personal calendars	●	●	○	●	○	○	●
Service and support							
Toll-free number	●	○	●	●	○	○	●
Daily support (weekday hours)	10	9	12	11	10	9	10
BBS	●	●	●	○	●	○	●
Fax	●	●	○	○	○	○	○
Additional extra-cost services	●	●	●	●	●	○	●
	BEST BUY						

W Indicates Windows product.

[1] Average of one 10-user, two 25-user, and one 50-user installation, the last on two LANs linked by modem.
[2] No LAN-to-LAN links available.
[3] DOS version only.
[4] Windows version only.
[5] Truncates log-in to 8 characters.
[6] Memory-resident DOS version extremely limited.
[7] Replies to sender only.
[8] Keywords provide folderlike capabilities.
[9] Windows version can't address messages directly to shared folders.
[10] Doesn't provide list.
[11] By date thread started, not date of individual message.
[12] By date range and/or assigned keyword only.
[13] Displays list of messages but can't follow thread.
[14] In-box only, by date only.
[15] By date only.
[16] Extra-cost option.
[17] Unavailable at press time.
[18] Imports user IDs but not groups.
[19] When participant declines to attend meeting, organizer is not notified.

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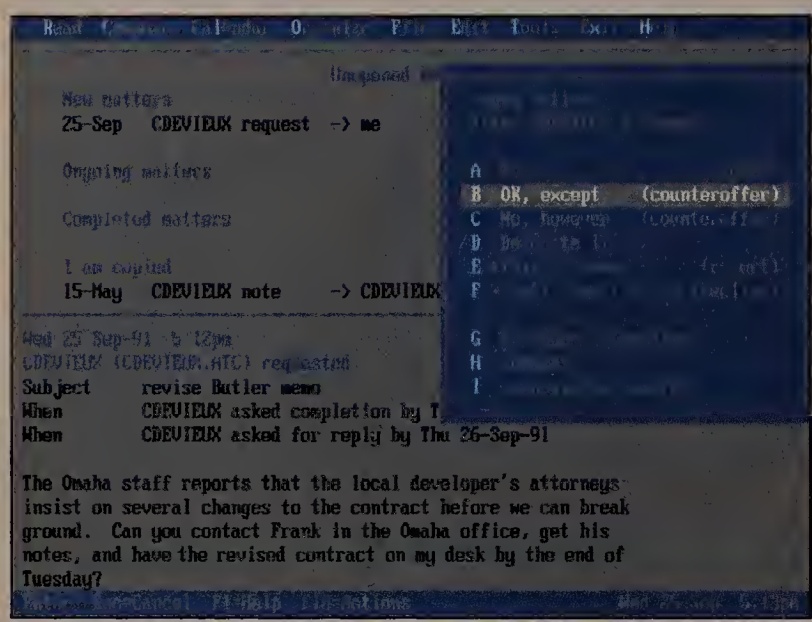
The Coordinator II 2.10

PROS: Displays message histories, integrated scheduler

CONS: Only one attachment per message, difficult interface, expensive, no TSR

The Coordinator is designed not just to deliver E-mail but to streamline office communications using a system of standard message types. However, its thorny interface and rigid message system may well have the opposite effect.

The Coordinator takes an unusual approach to messaging: You select from a series of message types like Inform and What If. If you choose 'OK, except' when replying to a 'Request', *The Coordinator* inserts 'OK, if we agree to some changes' into the subject heading of your response. This device is clever but it still doesn't really make messaging easier or make up for the lack of such basic tools as return receipts and multiple file attachments.



Short on time? The Coordinator's series of built-in message types lets you respond quickly.

The Coordinator's strength is its *message threading*, which lets you view a history of preceding messages as you compose your reply. You can even search for unfinished threads, such as unanswered Question messages. There are no folders, but you can at least search messages by one or more keywords of up to 9 characters each.

The program comes with a rudimentary personal calendar and integrates a version of *Network Scheduler*. However, when someone declines to attend a meeting, that person's name is removed from the attendee list with no notice to the organizer—bad news if you regularly plan meetings with more than a handful of participants.

The Coordinator is no joy to set up and administer. It had trouble with Quarterdeck's *QEMM386* memory manager, and the company couldn't provide a work-around. The technical support staff, although well informed, usually took several hours to get back to us.

Viewing message threads is nice, but when it comes to basic E-mail, *The Coordinator* is a little uncoordinated.

Da Vinci eMail

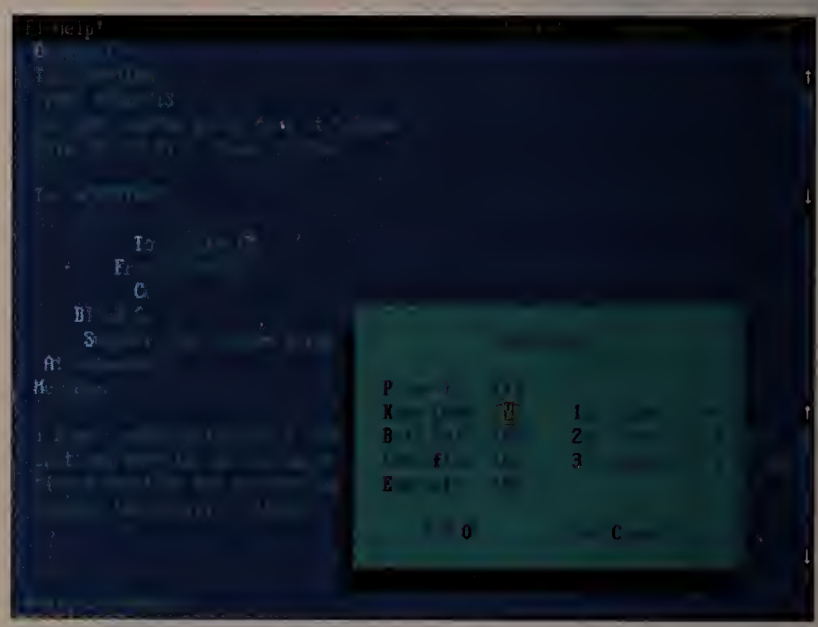
PROS: Easy to use, customizable, inexpensive

CONS: No folders, limited reply feature

WINDOWS Judged solely on the amiable interfaces, both *Da Vinci eMail for DOS 1.7* and its *Windows* version would take top honors. You also get excellent messaging and group scheduling features for a low price. But *Da Vinci*'s lack of folders for storing and organizing messages keeps it from besting *cc:Mail*.

Mouse support, pulldown menus, and plenty of hot-key shortcuts make *Da Vinci* the easiest E-mail for DOS users. The *Windows* version (1.8) is nearly identical, except it won't let you save a draft once you've addressed it. Macros let you send E-mail directly from major *Windows* applications like *Word for Windows*. However, in both versions the Reply command is limited; you can reply only to the sender and must add other addressees or copies manually, which makes it harder to conduct group discussions.

Da Vinci uses *Network Scheduler* to help you plan meetings, and its connectivity options are impressive. *Da Vinci* augments its LAN-to-LAN links with an automatic directory exchange utility, so your mailing list stays up to date. At $150 per user, remote access is far cheaper than other programs', and it's the only one to offer a *Windows*-based remote package. You can also buy gateways for fax and SNMP (to communicate with UNIX LANs).



Typical of Da Vinci's elegant design is the way it lets you check off all its message handling options in a single dialog box.

But the day you come back from vacation and find 300 messages in your inbox, you'll wish you had folders. Your only option is to save messages to text files, stripping them of attachments and losing the ability to forward or reply.

If *Da Vinci* had folders, it would be a great program. But if you expect message traffic to be heavy—and it probably will—try *cc:Mail* instead.

MHS: Mix-and-Match E-Mail

Eric Brown

You've just completed a memo in your word processor, and you're ready to pop it in the mail. You open the Mail menu, select an addressee from a list of co-workers, and send it off. Down the hall, your associate receives the message in *cc:Mail,* skims it, attaches a spreadsheet file, then forwards it to her boss, who picks it up in his groupware package. He pops up a scheduler to check a date, adds a note to the message, and sends it to the marketing department where another executive reads it in *Da Vinci eMail* and sends it off via a third-party fax gateway.

This mix-and-match E-mail scenario can happen today if you're on a NetWare LAN that's equipped with Novell's MHS (Message Handling Service)—an increasingly common message format that links different mail systems and MHS-compatible software.

MHS is essentially an E-mail engine that includes a set of messaging features but no user interface. Not only can two departments using different E-mail packages be linked with MHS, but when MHS is installed on a gateway PC, it serves as a LAN-to-LAN gateway to other MHS LANs. A wide variety of MHS add-ons are currently available, including fax servers and mini/mainframe connections.

Mail-Enabled Applications

Most of the full-strength E-mail packages reviewed in this article offer their own proprietary gateways and inter-LAN links, and most also provide MHS support or offer it as an extra-cost option. In addition, the majority of RAM-resident pop-up E-mail utilities and groupware scheduling programs also support the MHS standard, depending entirely on MHS to handle connectivity. That means you don't have to purchase the same E-mail solution for everyone in the office. Individuals or work groups within the larger network can move up to scheduling, forms, project management, and other mail-enabled add-ons when they're ready—and they'll still be in touch with the group at large.

The latest twist: MHS-based workflow managers such as Beyond's *Beyond Mail* and Reach Software's *MailMan*. These programmable E-mail managers gather your E-mail from MHS, filter it according to a set of rules you dictate, and route mail automatically if certain fields embedded in the messages meet the defined criteria.

But most of the new mail-enabled applications you'll encounter will be more familiar. You can now do basic MHS messaging from popular applications like *MultiMate, Framework,* and *1-2-3* (via Beyond's *@Mail* utility). Most of these are simple utilities, but look for more packages like Software Publishing's *Professional Write Plus for Windows,* a word processor that includes full-featured MHS E-mail.

An E-Mail Engine in Transition

Novell recently shipped MHS 1.5, which adds the ability to attach multiple files (up to 64) to a single message. The company used to bundle MHS free with any NetWare LAN, but now it charges $495 per server—an indication that Novell is taking MHS seriously.

But MHS still has room to grow—for example, MHS 1.5 lacks an exchange service to keep linked LANs' mail directories in sync. And at press time, Novell was still working on some incompatibilities with earlier versions of MHS.

The mix-and-match approach has its dangers, too—if you buy an MHS-based gateway from a third-party company, it may not be clear who's responsible for fixing whatever goes wrong: the E-mail company? The gateway company? Novell? To avoid a technical support maze, the accompanying reviews and feature table discuss MHS-based gateways only when they're sold and supported by the E-mail vendor.

Until MHS matures, you may want to invest in an E-mail package that offers its own proprietary connectivity options in addition to MHS—*cc:Mail,* for example. Down the road, the common E-mail lingua franca may be X.400, an internationally agreed-upon E-mail standard. But X.400 is difficult to implement, and capable directory management tools won't be ready for a few years, when X.500 is expected to ship.

In the meantime, MHS is clearly the standard. And as it proliferates, you'll see more mainstream applications offering E-mail from only a keystroke or a mouse click away.

Eric Brown is a senior editor for PC World.

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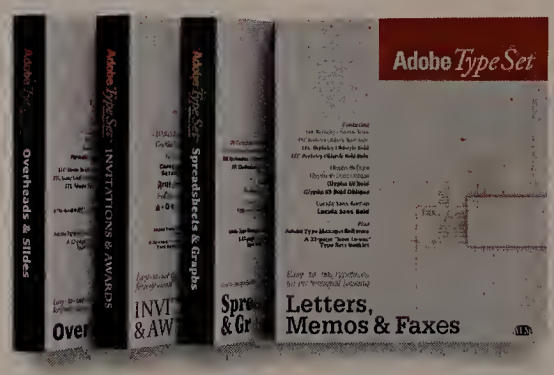

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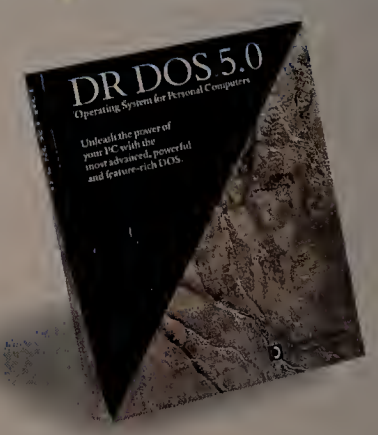

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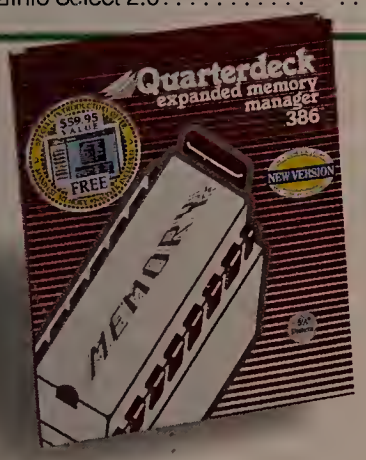

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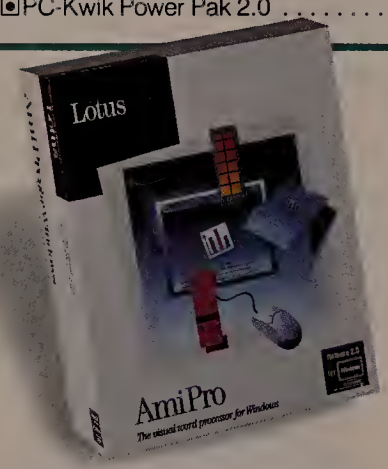

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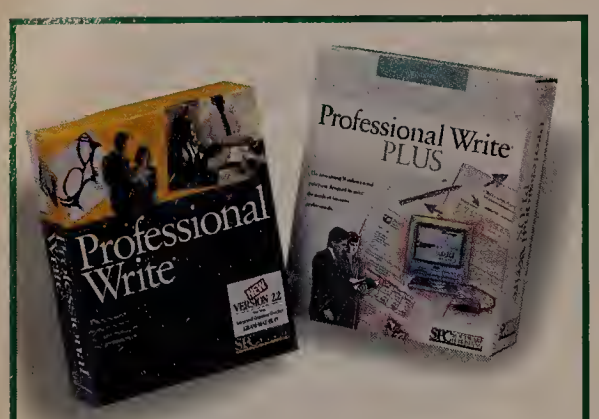

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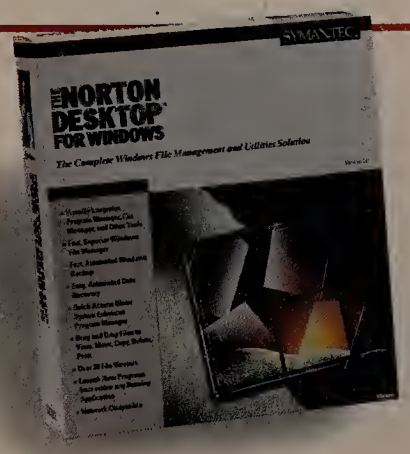

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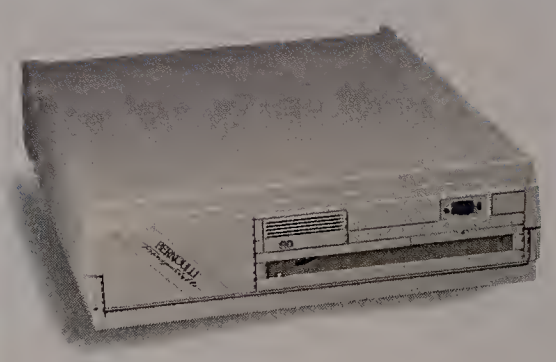

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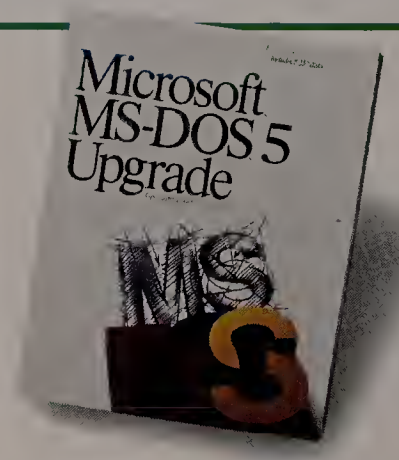

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Higgins 2.4

PROS: Excellent scheduler, contact-management tools, displays message histories

CONS: Awkward interface, difficult to administer

In several respects, *Higgins* is the most powerful program reviewed. Its connectivity options are first class, and it's the only program that tightly integrates group scheduling with full-featured E-mail. Unfortunately, an ungainly interface makes the program hard to learn and use.

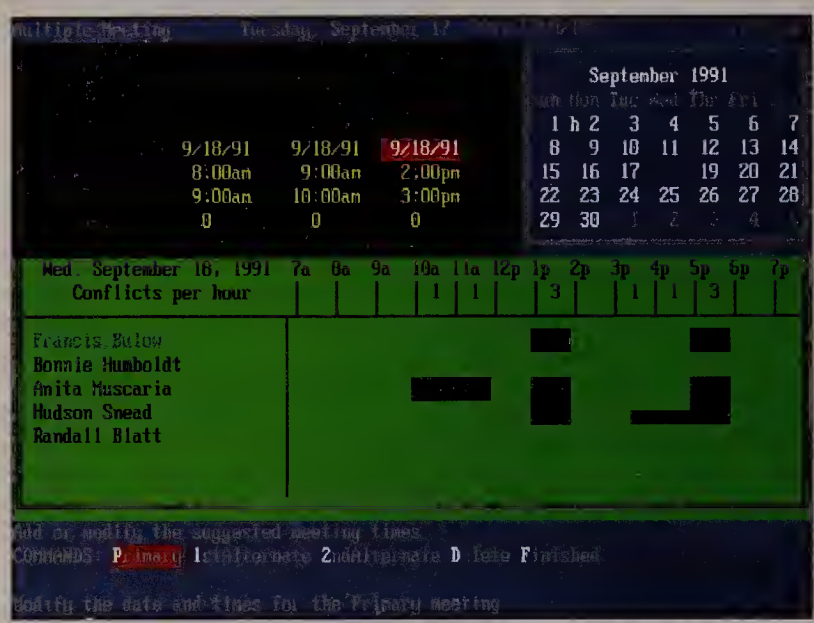
Higgins combines a confusing menu structure with some annoying quirks. For example, when attaching a group of files from the same directory, you must retype the path for each one. To change the sometimes garish screen colors, you have to run a BASICA program.

On the other hand, keeping your *Higgins* mailbox in order is fairly easy. Mail folders are integrated with a personal address book that has an auto-dialer, so you can use *Higgins* to store client information and have it at your fingertips when you call them. You can also trace message threads and assign keywords, but you can't tag several messages at once and move them to a folder.

Higgins's group scheduler is the best of the bunch. After consulting a time-conflict bar graph, you can propose as many as three meeting times. Prospective attendees get an E-mail message on which they check off acceptable times. When you set a time for the meeting, *Higgins* updates their personal calendars automatically.

Higgins's administrative utilities are poorly documented and absurdly hard to use. Your network administrator will end up spending a lot of time on the phone with tech support. Luckily, they're a knowledgeable bunch and seldom keep you on hold.

If you need to integrate full-power E-mail with top-quality scheduling, *Higgins* is your baby. But you'll have to put up with a cranky user interface.



Higgins's scheduler makes finding a workable time for a meeting very easy. You can even propose three possible times in one message.

InBox Plus 3.0

PROS: Easy to use, multiple windows, Mac software included

CONS: No RAM-resident mode; limited connectivity

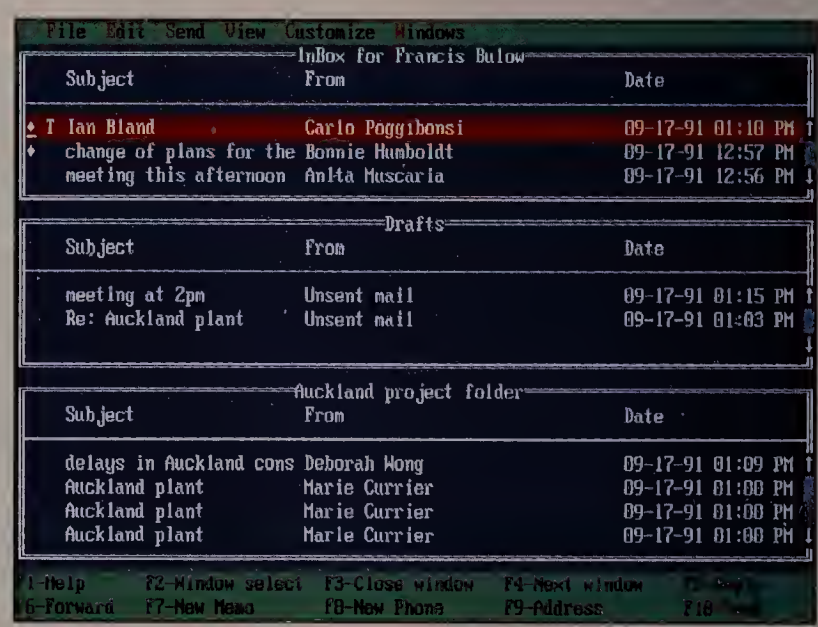
Low price, strong messaging capabilities, and an excellent interface make *InBox Plus* a tempting buy. The program comes with Macintosh software and can link to Sun workstations, so it's an economical choice for a mixed-platform network. But you can't hook into the world beyond your LAN—bad news if you need to bring remote users or branch offices into the E-mail fold.

InBox's character-based window interface makes creating messages a snap. You can tag user or group addressees, copies, and blind copies at the same time, and likewise tag multiple file attachments. You can compose or read as many messages as you like, each in its own window. If you exit before completing a message, *In-Box* automatically saves it to a Drafts folder. But, as with *The Coordinator*, you can't load *InBox* memory-resident, so you'll have to exit your applications to read or send mail.

With *InBox*, you can open multiple folders at once and set up folders on the server *or* your local hard disk. A unique undelete command lets you retrieve messages you delete accidentally. But unlike the DOS versions of *cc:Mail* and *Microsoft Mail*, *InBox* can't search more than one folder at a time.

While *InBox* is easy on LAN administrators once it's set up, getting there is a chore. You have to configure each user's account separately and alter the log-in script or AUTOEXEC.BAT.

Connectivity is *InBox*'s real downfall. It has no MHS option, so you can't connect to MHS-compatible mail systems. And without LAN-to-LAN links or remote-user options, it's only for companies whose communications needs don't extend beyond four walls.



With InBox's windowing interface, you can access drafts and frequently used folders while you're shifting through your mail.

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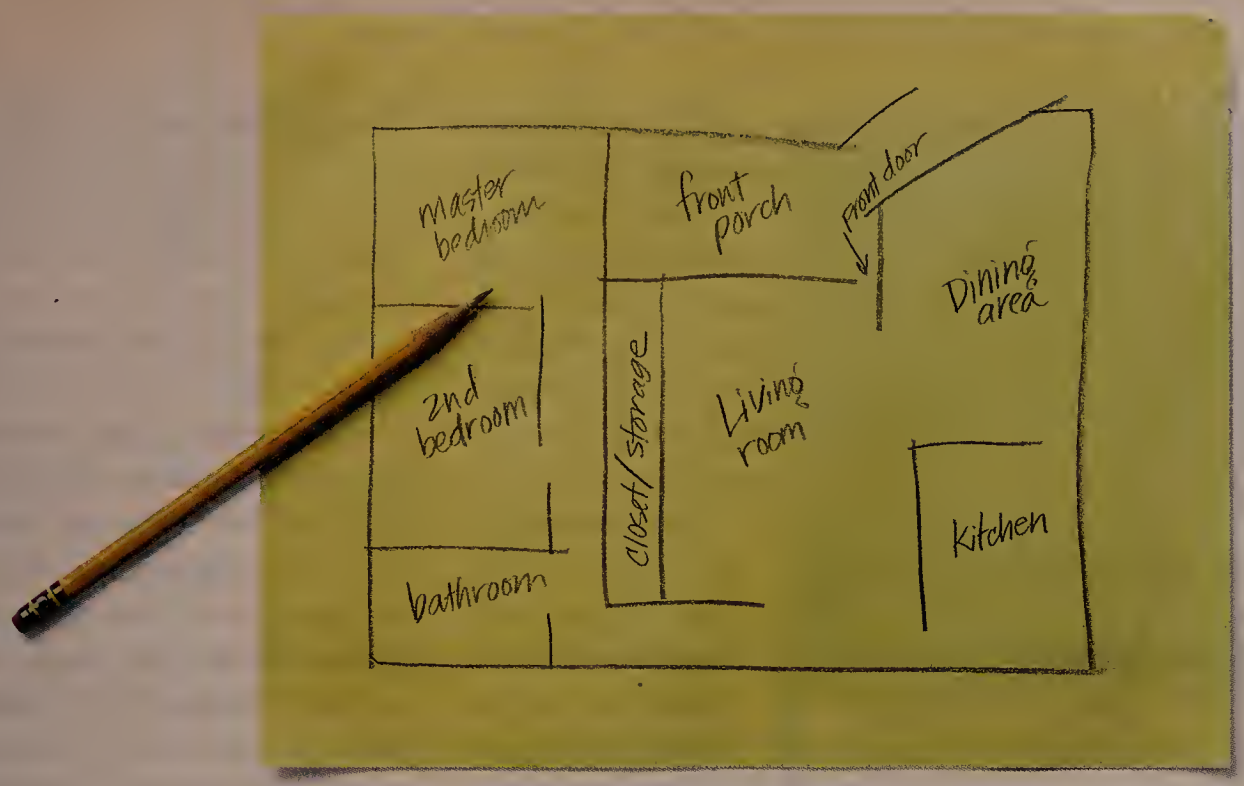

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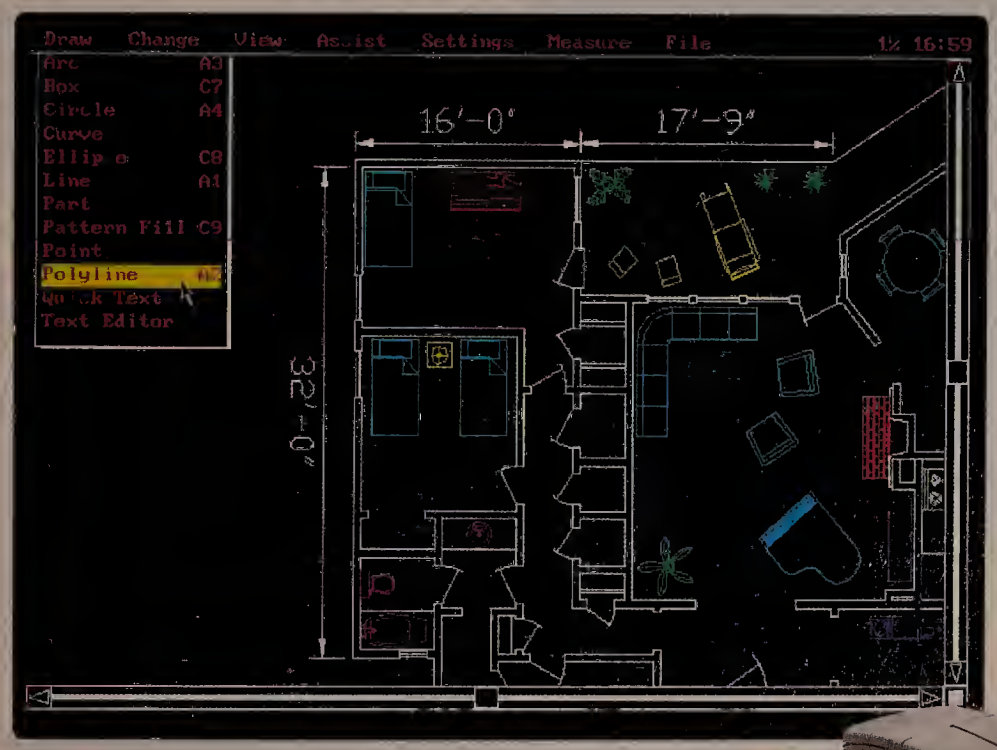

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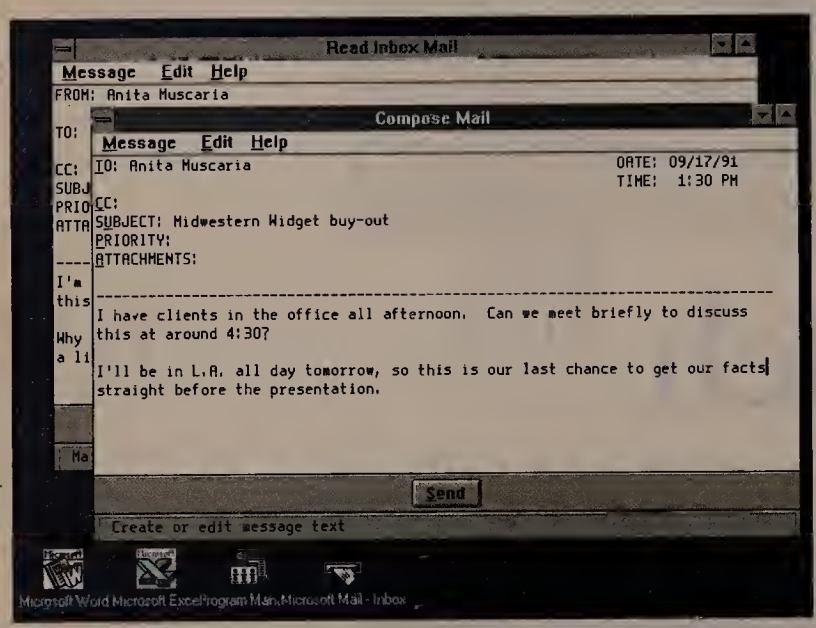
Circle 99 on reader service card

Microsoft Mail 2.1

PROS: Easy to use, powerful message management, full-text search, optional archive utility

CONS: Search doesn't display message list, no scheduler

WINDOWS Though Microsoft is new to the PC E-mail game, *Microsoft Mail* isn't—the company recently purchased *The Network Courier* and repackaged it with only minor changes. *Microsoft Mail* shares its predecessor's superb messaging skills and easy operation but hasn't yet inherited *Courier*'s broad range of connectivity add-ons. That omission keeps *Microsoft Mail* from being a Best Buy.



Microsoft Mail for Windows lets you switch between separate fixed-size windows for reading messages and composing replies.

You can't decide whether to go DOS or *Windows? MS Mail* gives you both. The DOS version lets you tag selected folders and search the titles *and* contents of messages for a short phrase. (Unfortunately, it doesn't display a list of the relevant messages—you have to page through each one.) You can restrict access to a shared folder, making private on-line meetings easier. When a new person joins the discussion, he or she can get up to speed by reviewing the accumulated messages.

The *Windows* version lacks most of these tricks but adds a few of its own. You can create folders within folders, handy for multifaceted projects. You can't read more than one message at a time, but separate read and compose windows let you flip back to read a message as you draft your reply.

At press time, the only connectivity option available was the bundled LAN-to-LAN gateway, which lacks directory exchange, and there's no group scheduling option. (Microsoft says remote access and other gateway options will be available by the time you read this.)

Microsoft Mail is a fine choice for small LANs that can live without broad connectivity options and group scheduling. Once Microsoft supplies these missing features, *Mail* will be a serious contender for the Best Buy crown.

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WordPerfect Office 3.0

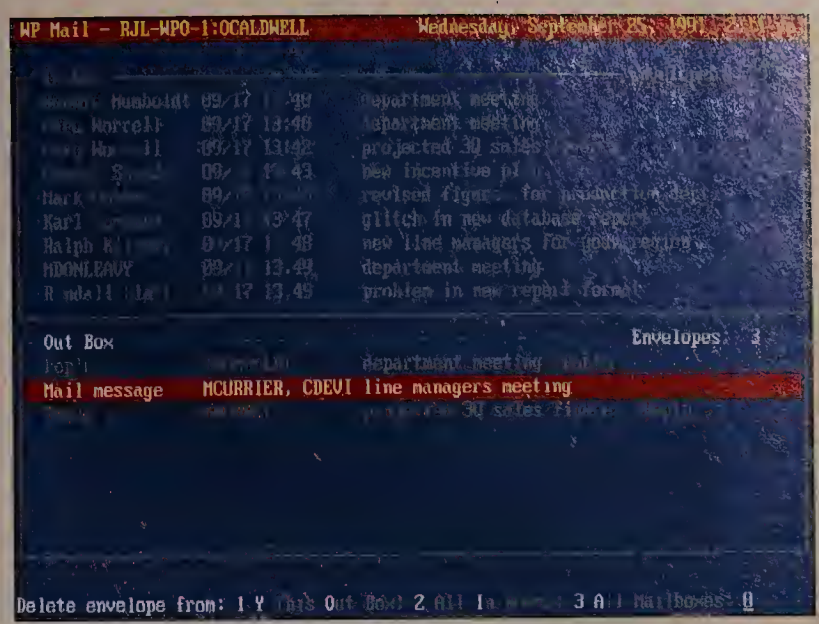
PROS: Works well with WordPerfect, comes with personal productivity tools

CONS: No folders, no search, no remote dial-in

WordPerfect Office is designed as a multifaceted control center for all your DOS applications. You get a *PC Tools*-like bundle of personal utilities, plus E-mail and group scheduling. But while *Office*'s data base, file manager, and scheduler are solid, its E-mail is crippled by a lack of message management tools.

WordPerfect users will feel right at home in this *Office*. Both employ the same keyboard shortcuts, and it's easy to paste text from one program into the other. You can tag addressees, copies, and blind copies in one pass on the user list and save the whole selection as a mailing list. You can see exactly when a message was delivered, read, and deleted. If you delete it from your "outbox" before it's read, the other person will never have to see it —which is a unique safeguard against overly hasty replies to your coworkers' messages.

The group scheduler couldn't be much easier. You can view free time via a bar chart or bring up a list of all users' free periods for a specified number of days. When prospective participants open their personal calendars, the proposed meeting is displayed, along with a menu asking them to accept the meeting, reject it, or request more time before deciding.



WordPerfect Office lets you delete a message you sent before your intended recipient reads it.

There's just one glaring omission from the *WordPerfect Office* suite: message management. It offers no folders, no keywords, no search. You can't even sort the in-box. All you can do is save messages to text files—which is really bad news if you get more than a few messages a day.

WordPerfect users who need E-mail and scheduling help might be tempted to put up with the program's lack of message management tools. For most users, however, *Office* is not the best choice.

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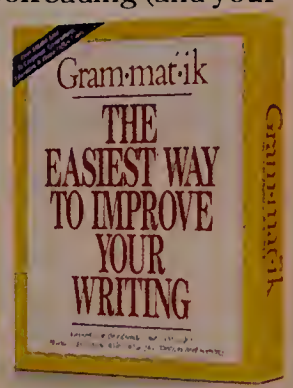

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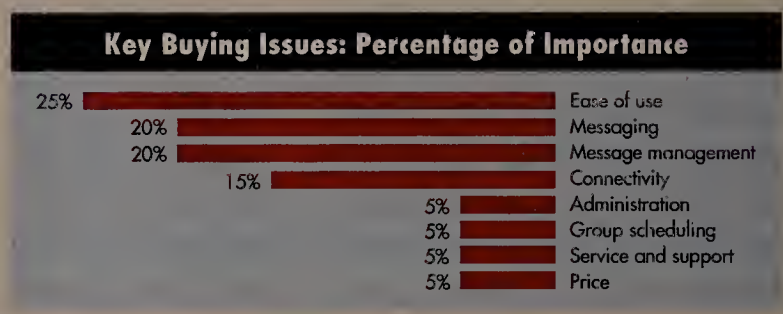
EXECUTIVE SUMMARY

cc:Mail Earns the Stamp of Approval

Whether you use DOS or Windows, cc:Mail gives you everything you need for easy-to-use E-mail.

With top-notch message capabilities and broad connectivity options, Best Buy **cc:Mail** is the top E-mail solution for LANs large and small. **Da Vinci** also impresses, though its lack of folders makes it impractical for users who need to manage heavy message traffic. And look out for **Microsoft Mail**—once its remote, fax, and MHS connectivity gateways arrive, it will be a major contender for the E-mail crown.



Excellent ★★★★
Good ★★★
Fair ★★
Poor ★

	Reader service no.	Ease of use	Messaging	Message management	Connectivity	Administration	Group scheduling	Service and support	Price	Overall value
cc:Mail for MS-DOS 3.2[1] cc:Mail for Windows 1.0	666	★★★★	★★★★	★★★★	★★★★	★★½	★★★½	★★★½	★★★★	★★★★
Da Vinci eMail for DOS 1.7[1] Da Vinci eMail for Windows 1.8	668	☆☆☆☆	☆☆☆☆	☆	☆☆☆☆	☆☆☆☆	☆☆☆½	☆☆☆☆	☆☆☆☆	★★★½
Microsoft Mail for PC Networks 2.1[1]	671	☆☆☆☆	☆☆☆½	☆☆☆☆	☆	☆☆	½	☆☆☆	☆☆	★★★
Higgins 2.4	669	☆½	☆☆☆½	☆☆☆	☆☆☆☆	☆	☆☆☆☆	☆☆☆	☆☆	★★½
InBox Plus for DOS 3.0	670	☆☆☆½	☆☆☆☆	☆☆☆	½	☆☆	½	☆☆☆☆	☆☆	★★½
WordPerfect Office 3.0	672	☆☆½	☆☆☆☆	½	☆½	☆☆☆☆	☆☆☆☆	☆☆☆½	☆☆½	★★½
The Coordinator II 2.10	667	☆☆	☆☆	☆☆☆	☆☆½	½	☆	☆☆☆½	☆	★★

[1] Ratings for DOS and Windows versions were averaged.
Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

WHERE TO BUY

cc:Mail
cc:Mail
2141 Landings Dr.
Mountain View, CA 94043
800/448-2500
415/960-0840 (fax)
LIST PRICE: DOS $195, Windows $495; additional 8 users $195; 25 users $595
Reader service no. 666

The Coordinator II 2.10
Action Technologies
1145 Atlantic Ave.
Alameda, CA 94501
415/521-6190,
415/769-0596 (fax)
LIST PRICE: 10 users $1800, 30 users $3000, 50 users $4500, 100 users $7500
Reader service no. 667

Da Vinci eMail
Da Vinci Systems
P.O. Box 17449
Raleigh, NC 27609
800/328-4624,
919/787-3550 (fax)
LIST PRICE: DOS version 8 users $295, 30 users $895, unlimited on single server $1495; Windows version 8 users $445, 30 users $1095, unlimited on single server $1595
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Higgins 2.4
Enable Software/ Higgins Group
1150 Marina Village Pkwy. #101
Alameda, CA 94501
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InBox Plus 3.0
Sitka Corp.
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415/769-8771 (fax)
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Reader service no. 670

Microsoft Mail 2.1
Microsoft Corp.
One Microsoft Way
Redmond, WA 98052
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Screen type	*Flat face*	*Round face*
Cabinet depth	*453mm*	*475mm*
Controls	*On/off up front Degauss up front pincusion up front*	*On/off recessed Degauss in back None*
Modes	*Supports EGA*	*None*

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Since New York Life Insurance agent Jack Healey started using his laptop as a sales tool, his client roster and his income have more than doubled.

ANDY FREEBERG

Laptops STEAL THE SHOW

How laptop presentations made it possible for 4000 New York Life Insurance agents to shorten their sales cycles and fatten their wallets.

Bronwyn Fryer

When you're in the brutally competitive business of selling life insurance, you need all the help you can get. Today, more than 2400 companies nationwide, each offering a smorgasbord of policies, vie for a limited number of high-income clients.

Though closing a sale quickly is critical to their success, many life insurance agents waste precious selling time using manual methods to gather client information, analyze an insurance need, and develop a presentation. "All this makes room for competitors to come in or for prospects to change their minds," says Jack Healey, a 30-year veteran of New York Life Insurance Company. "By the time you go in for your second or third meeting, the sales potential's lost its pizzazz."

New York Life's innovative solution to this problem has boosted Healey's personal profits and the company's overall business. The solution, called NYLExpress (New York Life Express), is the company's automated sales support sys-

tem. With NYLExpress, the average number of sales calls agents make has risen by 20 percent while the number of closings has gone up by 30 percent. Healey's client roster alone tells the story: Before acquiring NYLExpress, Healey had fewer than 2000 clients. Today, his client data base has 3500 entries and is growing every day.

At the heart of NYLExpress is an interactive graphical presentation system on laptop computers. With a laptop presentation, a client can quickly grasp the complex decisions associated with a given policy. "People are too proud to say they don't understand numbers," says Healey. "With the graphics, they can immediately understand what all those numbers mean." And, he notes, the computer imbues the presentation with authority and credibility. "People believe computers."

The Laptop Option

In the pre-PC days, Healey would interview prospects at their home or office, manually taking notes on the prospect's vital statistics and financial situation. Then he would return to his office and use a calculator and a pencil to figure out which insurance policy might be best for the client. Complex calculations—taking into account a client's current and future financial status, projected interest rates, and premium payments over a lifetime—could often be rife with errors. If the client asked for an alternative policy, Healey would have to repeat the process. Since presentations usually consisted of showing the client pieces of paper with columns of complicated numbers, a given policy was difficult both for the client to understand and for Healey to explain. "A two-cycle sale was the best an agent could hope for," he recalls. "A complex agreement could go on for a year."

Processing added more time to the sales cycle. By the time the application was keyed in to a mainframe, corrected, processed, and accepted, the policy could have taken up to eight weeks to be completed. Correspondence with the home office by mail and telephone also wasted time.

In 1985 New York Life began addressing these issues to make its agents more productive. Management started by subsidizing agents' purchase of PCs, printers, and software and establishing a remote mainframe connection. The company also bought custom-built needs-analysis software for agents.

THE BOTTOM LINE

PROBLEM:

- Long sales cycle
- Six- to eight-week application processing time
- Complex insurance policies to learn and explain

SOLUTION:

- NYLExpress (New York Life Express)—a combination of personal computers, custom and off-the-shelf software, and remote communication to the company mainframe
- Laptops for client-site presentations

BENEFITS:

- 20 percent more sales calls, 30 percent more sales closings
- Easy for clients to understand complex insurance concepts
- Shortened processing time

Three years later management gave agents a boost by providing them with laptop computers, which would allow them to prepare interactive presentations for their clients. The company experimented with 40MB Zenith laptops with black-and-white screens. As the number of applications grew and 386 laptops became available, the company standardized on NEC 386SX laptops with color screens.

A Laptop Slide Show

The laptops come with a 100MB hard disk to hold a suite of both custom and off-the-shelf graphics and needs-analysis programs, and a 2400-baud modem that allows agents to connect to the home office. Even agents who have never touched a computer can use the laptops to demonstrate the company's strengths, key in a client's vital statistics, such as age, number of children, income, assets, and liabilities, and accurately compute the client's insurance needs. The agents can also present the data in an easy-to-understand, graphical form.

When Healey sits down with a client and turns on the laptop, an opening "slide show" about New York Life presents the company's strengths. Then Healey presses a key to access *FNA*, an interactive presentation and needs-analysis application developed for New York Life by Vernon Publishing Company. The program allows Healey—or the client—to enter personal financial information on a series of colorful, easy-to-read screens.

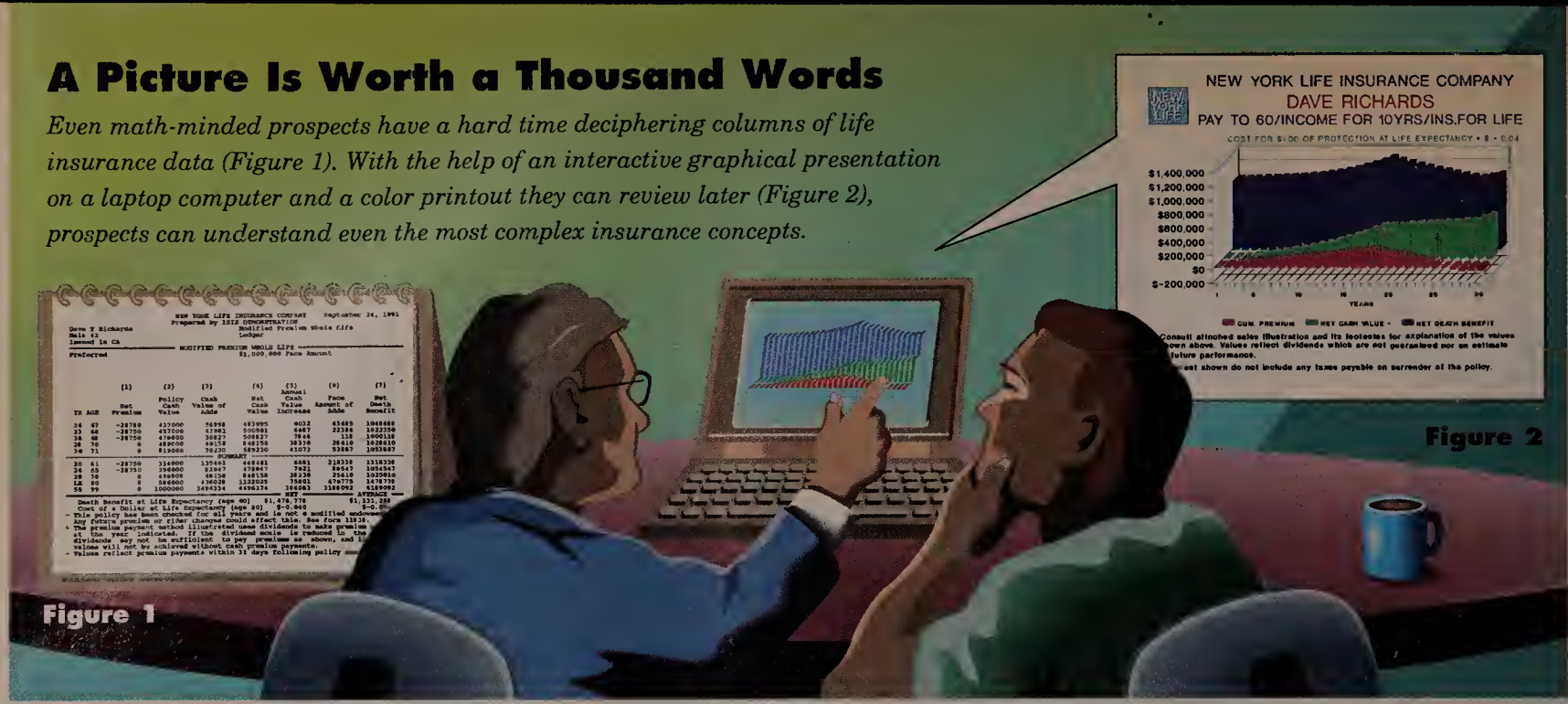
As the information is entered, successive screens personalize the session by incorporating the client's name and basing responses on previous answers. For example, depending on whether the client rents or owns a home, successive screens will use the words *rent* or *mortgage*.

If a client is considering estate planning or business insurance, Healey uses another custom presentation program, developed by Impact Technologies, to determine the appropriate amount of insurance. Because it's easy to use, the *Impact* program also doubles as a training tool for new agents, who can use it to teach a client—and themselves—about complex insurance concepts. Another insurance industry–specific program that performs complex calculations, *Isis*, allows Healey to match a client's needs to the most appropriate New York Life insurance policy.

Healey likes to quote from Isaac Kibrick, a nineteenth-century Russian

A Picture Is Worth a Thousand Words

Even math-minded prospects have a hard time deciphering columns of life insurance data (Figure 1). With the help of an interactive graphical presentation on a laptop computer and a color printout they can review later (Figure 2), prospects can understand even the most complex insurance concepts.



immigrant who became New York Life's top salesperson: "Look for the loss." "People need to understand that they're losing money by not buying life insurance," Healey explains. "You have to show them how." To do so, he uses his technological "toys."

Since prospects have a tough time understanding dizzying tables full of numbers, Healey shows the loss with a custom color graph of projected insurance benefits. Using Alpha Software's *Keyworks,* Healey transfers the numbers into a *1-2-3* spreadsheet for further manipulation. "I can work out the accumulation of a given premium over the years," says Healey. "After that, I import it into *Harvard Graphics* and produce a personalized color graph illustrating, for example, the client's net death benefit, net cash value, and premium over a 20-year period."

The Jersey Connection

In the days before NYLExpress, Healey relied on the San Francisco office's data processing pool to key in data from a handwritten application and then upload it to a mainframe in Clinton, New Jersey. Now, once a sale is complete, he can do all the necessary data processing himself by connecting his laptop to the mainframe by modem from the client's site.

To make the connection, Healey dials in via modem to the San Francisco sales office's IBM Series/1 minicomputer, which connects to the corporate mainframe. "The dial-in connection lets me inquire about past policies, check on the status of an application, send and receive E-mail and update the client records. I've got everything I need."

A new addendum to NYLExpress is an on-line application-approval system that lets Healey determine immediately whether the company can issue the client's policy. If the answer is yes, Healey can upload the completed application and approve the policy on the spot.

When he's not visiting clients, Healey relies on the less portable tools that reside in his 31st-floor office in San Francisco: an IBM 386 with 120MB of memory, a VGA monitor, an internal Hayes 9600-baud modem, and two Hewlett-Packard printers—a LaserJet for correspondence, and a PaintJet for color presentation output. Aside from the NYLExpress software, Healey uses a variety of off-the-shelf word processing, spreadsheet, graphics, sales tracking, and desktop organizer packages provided by New York Life. "When my clients visit me in the office, I can create custom presentations for them in *Harvard Graphics* and simply print them out on the PaintJet," says Healey. "That way, they can take the presentation home to keep."

Big Benefits

The NYLExpress system has made clinching the sale easier, Healey says. His client roster—and his income—have nearly doubled as a result. The graphical presentations have also resulted in ongoing business because, he notes, "clients maintain policies they can understand."

The flexible applications have helped Healey find profitable solutions for his clients that would have been impossible to figure out previously. For example, he's been able to graphically contrast a *term* (standard protection) policy with a slightly more expensive whole-life policy that creates savings in the long run. "I show how a whole-life policy can, when taking away the cost of term insurance, pay more than 12 percent compound interest over 20 years and how clients can reap this benefit by investing a few more dollars than they would for a term policy." Healey's solution has netted him a tidy $30,000 in additional commissions in four months.

The system also serves as a valuable learning tool for novice insurance agents, who use the laptop slide shows to reinforce their knowledge of the company's products while they give the demonstrations. "The insurance business has grown very complex," explains New York Life corporate vice president Victor Mutnick. "Our agents must be able to explain our policies to their clients in an understandable way."

Being able to control the sales process from start to finish without having to rely on the data processing pool makes New York Life salespeople better at what they do. "The NYLExpress system puts the responsibility for accuracy back where it belongs—with the salesperson," Healey concludes. "It eliminates mistakes, it cuts sales time in half, it adds credibility with the client and dollars to your bottom line. What more could you want?"

Bronwyn Fryer is an associate editor for PC World.

JOE SHOULAK

"I can't work my VCR and they're expecting me to understand this!"

– Helen Lynch, Secretary

"This was a big investment. I'm still waiting for the big return."

– Susan Shirk, CEO

"I thought you said these were going to increase productivity."

– Matt Sentell, Office Manager

Presenting a co
company created b

During the 1980s, personal computer use increased by over 5000%. Even so, some industries saw productivity increase by as little as one percent.

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When it comes to clear course manuals, ExecuTrain wrote the book.

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grams such as Lotus 1-2-3® as simple as learning your ABCs.

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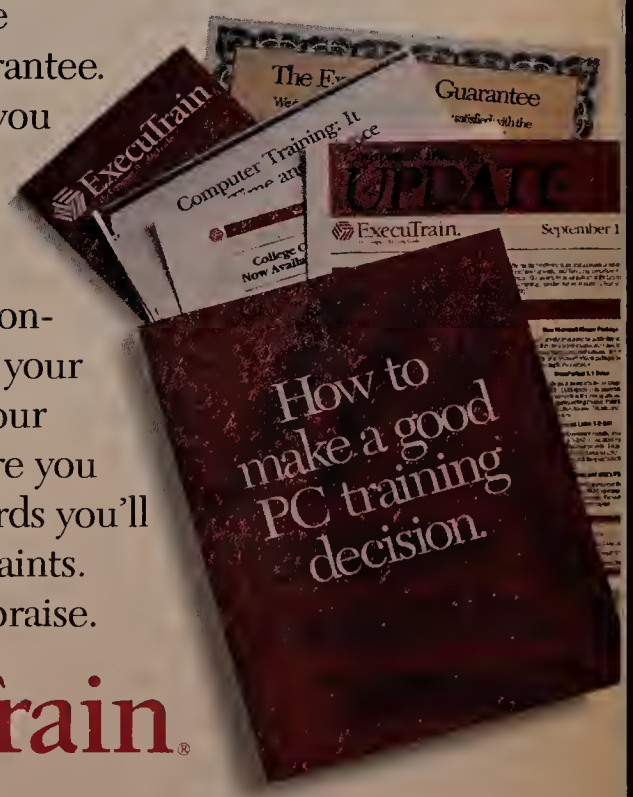

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Notebook PCs

Learn what six veteran users have to say about ultralight laptops from Compaq, Toshiba, and Texas Instruments.

Alice LaPlante

Who says you can't take it with you?

Not our road testers, who regularly travel with some of the leading notebook PCs (which we define as systems weighing less than 10 pounds when fully equipped).

Sure, there are compromises. The keyboards can be cramped, battery life isn't what it's cracked up to be, and as for weight—well, you might say manufacturers fudge those specs a bit.

But even the compromises wouldn't convince the users we spoke with to trade in their lighter, more powerful notebooks for the laptops of yesterday. Some have even shucked off their desktop systems in favor of a one-size-does-all notebook that, with a few additions, converts to a usable desktop PC.

Of the three notebooks evaluated here, two are 386SX-based systems, the Compaq LTE/386 and the Texas Instruments TravelMate 3000. We also spoke with users of Toshiba's 286 notebook, the T1200XE, since the company's 386SX notebook had barely hit the streets by press time (see "286 Notebooks: Traveling Light" in this issue for a review of the T1200XE). Regardless of the class of system they used, though, performance wasn't a primary concern for our road testers. All the systems received relatively high marks in this category.

The same can't be said of battery life, though, which consistently received the lowest grades of any notebook features. More than one user reported finding, to their dismay and aggravation, that their notebook's battery died long before their plane ever touched the tarmac.

Are *you* willing to accept the compromises? Read on, and then decide.

COMPAQ LTE/386

Alice Goldberg

Alice travels to Ciba Geigy sites around the country doing management consulting. She also works frequently at home, and the LTE is her only PC.

I love being able to pull my machine from the docking station and take it home or on the road without having to worry about whether I have everything with me. Switching between a desktop and a notebook was very cumbersome.

For the functionality the LTE offers, it's very portable. The Poquet (my previous notebook) wasn't adequate for presentations, so I used to carry a larger laptop with me when I had to do a demo. The battery lasts between 2 and 3 hours, which is usually enough to work on a plane without worrying about it running out.

It was a little hard giving up my desktop system, but in practice it hasn't made much of a difference, because I use the docking station and a VGA mon-

JAVIER ROMERO

SUZANNE DE CHILLO

Name: Alice Goldberg
Position: Senior consultant
Company: Ciba Geigy, Ardsley, New York
Hardware: Compaq LTE/386, 6MB RAM; 60MB hard drive; docking station, LAN card, VGA monitor (in the office)
Software: *Extra, Word for Windows, Grandview, Professional Write Plus*

HERRAL LONG

Name: Kevin Puffer
Position: Quality control technician
Company: Nabisco Brands, Toledo
Hardware: Compaq LTE 386/20, 2MB RAM, 60MB hard drive
Software: *WordPerfect, Symphony*

JAMES HAMILTON

Name: Sheldon Laube
Position: Chief information officer
Company: Price Waterhouse, New York
Hardware: Texas Instruments TravelMate 3000, 4MB RAM, 60MB hard drive; external modem
Software: *Lotus Notes, Grandview, WordPerfect, Windows, Word for Windows, Hollywood, 1-2-3 for Windows, Stacker (file compression)*

itor in the office. I do have a concern about the ability to expand storage in the portable unit, though. I know I'm going to need more than 60 megabytes, and I don't want to have to add external storage. That would just add to the weight of the system.

Kevin Puffer

Kevin travels to various Nabisco bakeries nationwide, servicing machines that measure the quality of the flour produced by his division, Nabisco Flour Mill. He uses his LTE on the road to take notes and write reports.

Portability was a major factor in my decision to buy the LTE. I carry a lot of tools with me when I travel, and I like to keep everything else to a minimum.

Performance is good. I'm used to a 25-MHz 386 desktop machine, and I didn't want something that would slow me down. Expandability is a problem, though. Compaq offers a lot of add-on and expansion products, but their products are much more expensive than their competitors'.

Although the screen quality is good, I've found you have to turn it on, wait about five minutes, and then readjust it. It seems to take a while for it to get to its proper resolution. The keyboard is definitely one of the weaker links of the system. I don't like the cursor control configuration—that goofy L-shape is tough to get used to—and I miss being able to page up and page down easily. But on the whole I'd rather have larger, but fewer, keys.

Still, I've gotten more than I expected. It's not like having your desktop computer with you, but the differences are fairly easy to adjust to.

TEXAS INSTRUMENTS TRAVELMATE 3000

Sheldon Laube

Sheldon spends roughly half his time on the road, visiting Price Waterhouse regional offices and clients. He doesn't believe in checking luggage, so "every pound counts."

What I especially like about TI's notebooks is that they're really light. I loved my previous notebook (the 286-based TravelMate 2000) because it was only 4 pounds. This one weighs 5.7 pounds, and you feel the difference.

The battery life is acceptable—barely. It lasts about 2 hours, which isn't long enough if you're traveling from New York to L.A. It's on the flights lasting 6 hours that I want to get some work done, and every time I've used the 3000, the battery has run out. The keys don't have a lot of "travel" either, so it can be hard to tell if you've actually hit a key. I'm a very fast touch typist and I'm always missing spaces because of this.

There's no expandability to the 3000. It's not like the Compaq LTE, which you can plug into an expansion chassis and have a decent desktop system. So if you were buying only one machine, this wouldn't be a good choice.

Still, you can't beat what you get for such a low weight.

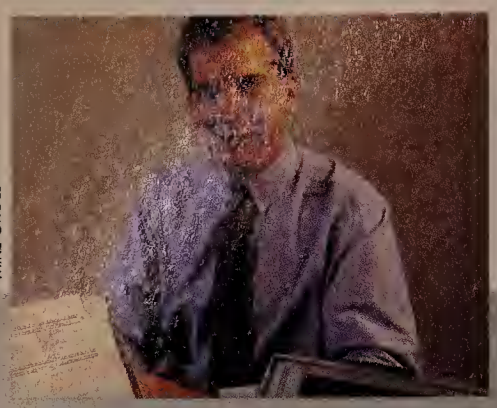
Jim Metzler

Jim is a partner in a CPA firm and his job takes him to client sites all over town, often to multiple locations in a single business day. He needs a light, unobtrusive computer.

I've used a lot of notebooks in the field, and the TI has fared very well in comparison. Its portability is good, and it does what I need on the road.

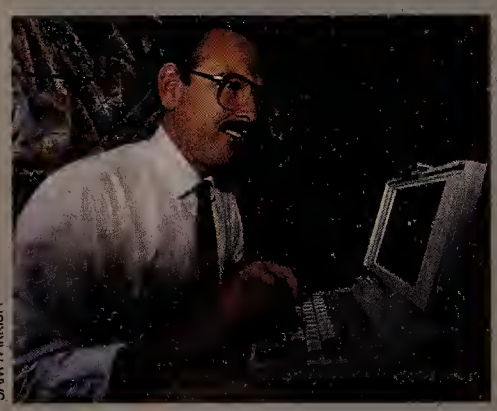
The TI's battery life is better than most, but all notebooks' are less than what they are touted to be. I took the 3000 on a business trip, got on the plane, computed for an hour, and then was out of business. You'd be crazy not to carry an extra battery.

Low glare on a screen is more important to me than high-resolution graphics or performance. Most notebooks are fine if you're working in the dark. The true test comes when you have glare, and the TI is pretty good in those circumstances. The keyboard has a good feel, and the function keys are easy to hit. You can't close your eyes and pre-



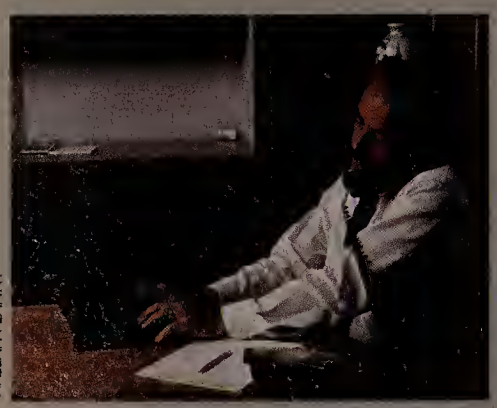
MIKE GROLL

Name: Jim Metzler
Position: Partner
Company: Gaines, Emhof, Metzler & Kriener, Buffalo
Hardware: Texas Instruments TravelMate 3000, 2MB RAM, 30MB hard drive; 10-key numeric keypad
Software: *1-2-3, Professional Write,* assorted auditing tools, custom time sheet program



SAM PARRISH

Name: Robert Mosley
Position: Programmer/analyst
Company: Bridgestone Tire, Nashville
Hardware: Toshiba 1200XE, 3MB RAM, 20MB hard drive
Software: *1-2-3, pcAnywhere, PFS: Write, PFS:File, Arbiter (communications)*



NAJLAH FEANNY

Name: Joe Schmader
Position: Marketing implementation manager
Company: Citicorp Mortgage, St. Louis
Hardware: Toshiba T1200XE, 1MB RAM, 20MB hard drive
Software: *Mortgage Power Plus (in-house software), WordPerfect, 1-2-3*

tend it's your desktop system, but for a notebook it's pretty good.

You don't need a ton of expansion for a notebook unless it's your main system. Accountants and CPA's need a numeric keypad, though, and only TI offers one that actually plugs in and becomes part of the machine.

TOSHIBA T1200XE

Robert Mosley

The T1200XE is Robert's only PC. He uses the notebook as his desktop system by day and takes it home with him in the evenings.

Overall, I've been impressed with the T1200XE. Its performance is good and the screen refreshes well. But don't be fooled by the manufacturers saying it's only a 7- or 8-pound computer. By the time you add everything up it's like carrying a Compaq luggable around with you. The cables and power supply alone add a pound or two.

The battery doesn't last as long as advertised, so I don't go anywhere without the power supply. I'd also prefer a VGA screen, but since I don't work with graphics it's not necessary.

I definitely wouldn't buy this machine as my sole PC. People talk about buying a laptop as their only machine, but I wouldn't do that unless you do a lot of traveling and absolutely need to carry your PC around with you.

Joe Schmader

Joe's been using his T1200XE for about a year to demonstrate automated mortgage sales software to Citicorp branch offices around the country.

I'm already carrying a briefcase and other papers, so portability is essential. I also have a Compaq SLT/286, which is about 4 or 5 inches high—much bulkier. The Toshiba has a much flatter case, which makes it easier to carry around.

It's also very important to be able to see the screen from an angle so the people I'm demonstrating software to can see what's happening. Because of the presentations I do, VGA compatibility would have been nice. In fact, if I'm going to do a presentation for more than one person, I'll use my Compaq because I can plug the machine into a large color VGA monitor and the graphics look much nicer.

But the Toshiba is a better machine to use on a day-to-day basis if you are constantly on the move. It's lighter and more compact, which is important, since I also carry a printer with me. ■

Alice LaPlante is a freelance writer in Palo Alto, California.

REPORT CARD

	Compaq LTE/386		Texas Instruments TravelMate 3000		Toshiba T1200XE	
	Alice Goldberg	Kevin Puffer	Sheldon Laube	Jim Metzler	Robert Mosley	Joe Schmader
Portability	A	A	A	A	B	B
Performance	A	A	A	B	B	B
Battery life	B–	C	C	C	C	C
Screen	C	B–	A	B	B	B
Keyboard	B	C	B	B	B	B
Expandability	C	C	D	A	B	B
Overall	A	A–	A	B	B	B

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Circle 142 on reader service card

Thumbs Up for Lightweight Laptops

Readers give high marks to the current crop of notebook PCs.

Roberta Furger

It's hard to imagine a class of hardware products that's changing more rapidly than notebook PCs. Nearly every day a new product is announced or a new company enters the already jam-packed field of notebook providers. The quality of these systems is improving at an equally fast clip.

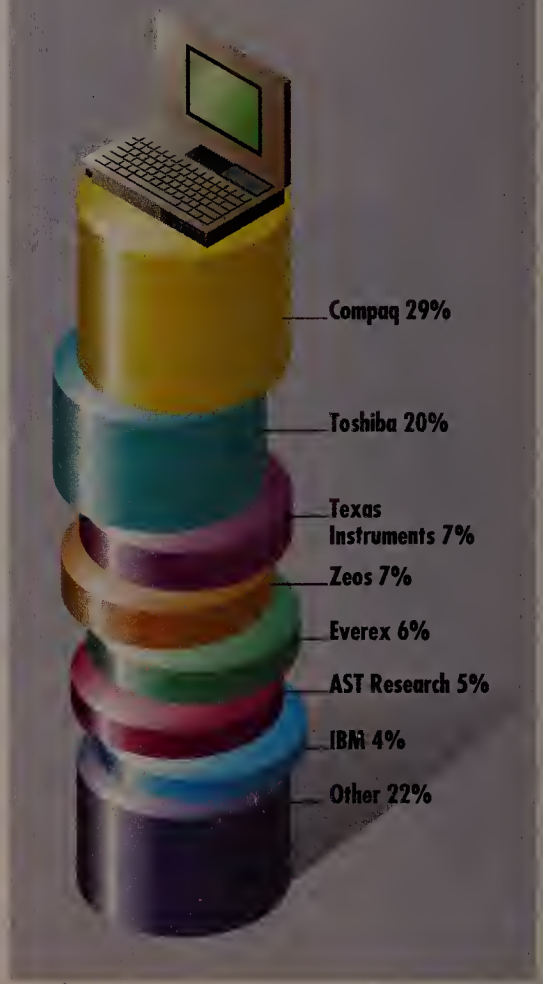
A little over a year ago the only notebooks available were slow, poorly equipped units. But today, users can get lightweight, full-featured notebooks that rival many desktop systems in performance.

So what are users looking for in these hot little numbers? Portability tops the list, according to our survey of 100 *PC World* readers. Performance and screen quality are also key. And although 386SX-based systems are receiving the lion's share of publicity, 286-based notebooks are holding their own. Fifty-two percent of the readers surveyed bought a 286 notebook rather than one of the new 386SX units now on the market.

Compaq boasts the largest installed base among our notebook users, followed closely by Toshiba, which is holding its ground despite entering the market rather late. Relative newcomer IBM, whose first notebook (the L40SX) was introduced last spring, has the highest overall satisfaction rating among its purchasers—although

COMPAQ, TOSHIBA DOMINATE THE NOTEBOOK MARKET

Together they make up nearly half the installed base at survey sites.



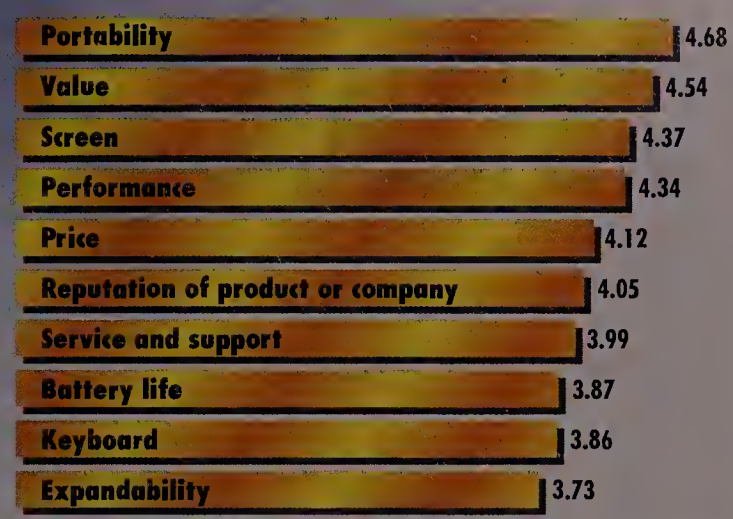
JEFF BERLIN

IBM USERS HAPPIEST WITH PRODUCT

Overall satisfaction with product
1=low 5=high

PORTABILITY TOPS LIST OF KEY FEATURES

Users rate important buying criteria
1=low 5=high



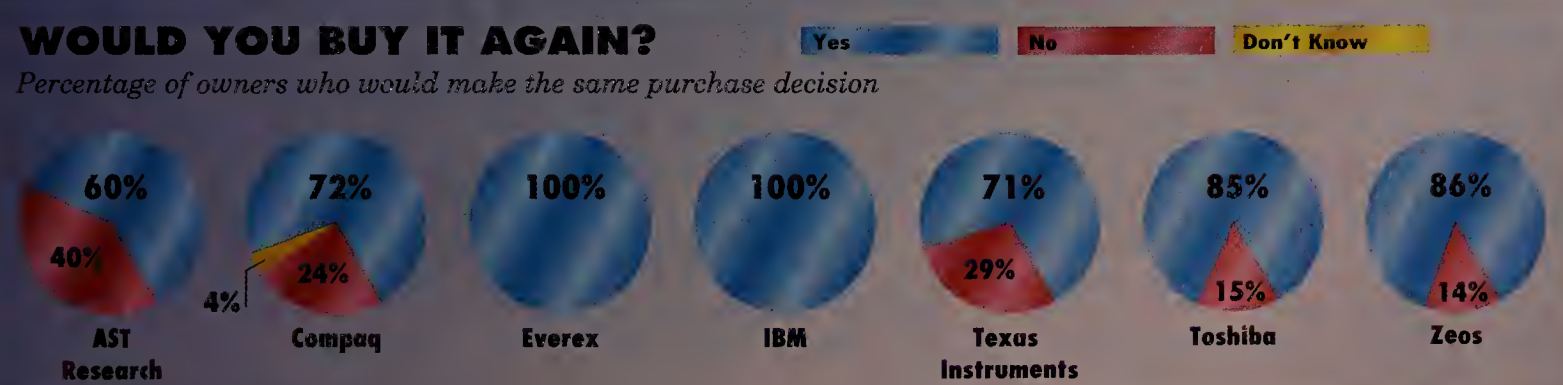
LIGHTWEIGHT NOTEBOOKS EARN HIGH SATISFACTION RATING

1=low 5=high

	Overall	AST Research	Compaq	Everex	IBM	Texas Instruments	Toshiba	Zeos
Portability	4.49	4.20	4.41	4.67	4.75	4.67	4.59	4.86
Performance	4.27	4.20	4.12	4.50	4.50	4.00	4.18	4.71
Screen	4.11	4.00	3.74	4.33	4.50	4.17	4.31	4.43
Value	4.09	4.40	3.74	4.50	4.25	4.14	4.18	4.43
Price	3.99	4.50	3.40	4.17	4.50	4.17	3.75	4.33
Service and support	3.86	4.00	3.61	4.20	4.50	3.00	4.08	4.75
Battery	3.83	3.40	3.96	4.17	4.00	3.29	3.80	4.33
Keyboard	3.81	3.20	3.35	4.17	3.75	3.25	4.25	4.29
Expandability	3.70	4.00	3.61	3.40	3.25	3.33	4.00	3.83

WOULD YOU BUY IT AGAIN?

Percentage of owners who would make the same purchase decision



Source: From a May 1991 survey of 100 PC World readers.

JEFF BERLIN

it's garnered only 4 percent of the installed base, according to this survey.

Most of the readers surveyed were happy with their choice, saying they'd buy the same unit again. Everex and IBM appear to have found just what their notebook customers are looking for, with 100 percent of their users reporting they would purchase the same unit. AST buyers were the least loyal; 40 percent said they would buy a different system.

Roberta Furger is an associate editor for PC World.

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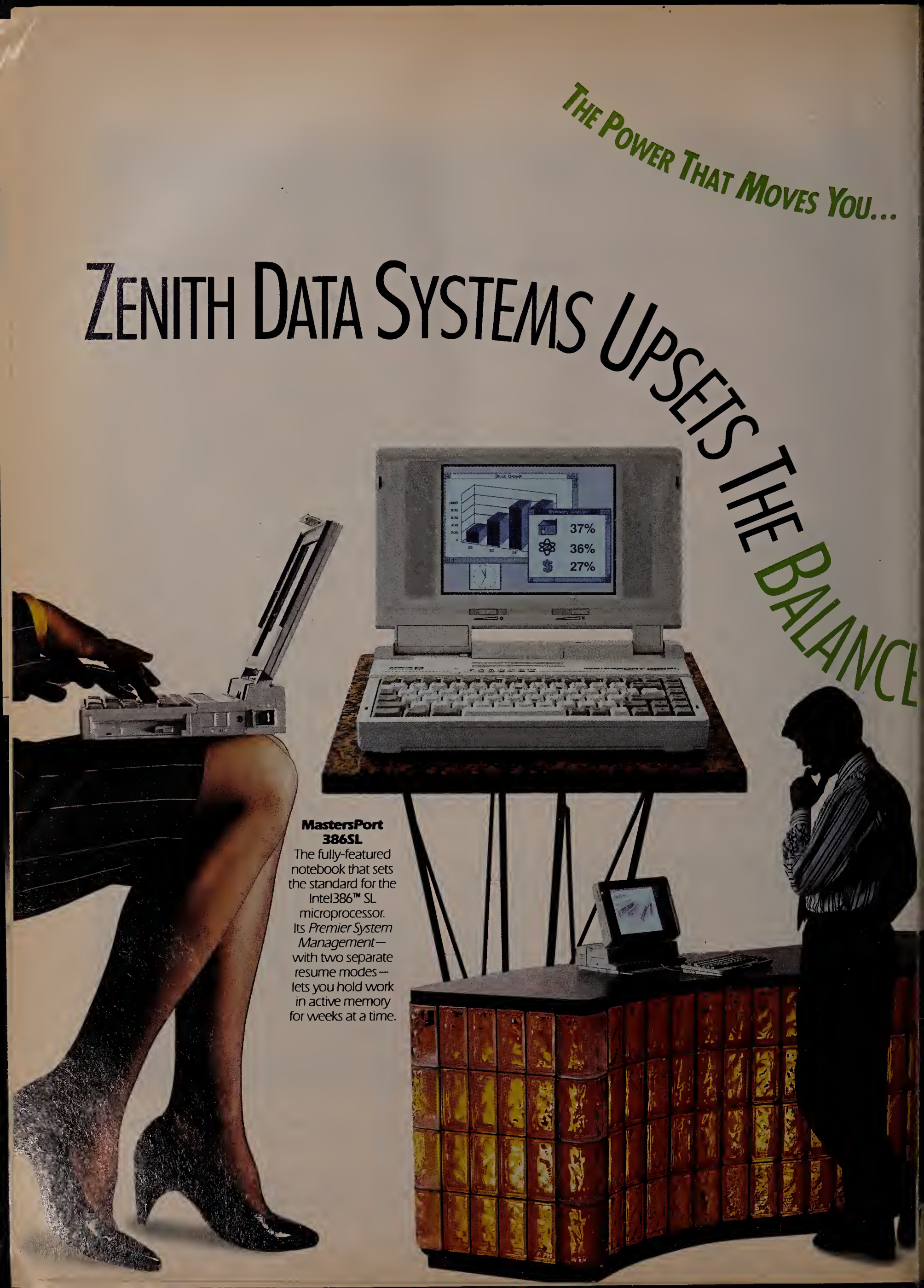

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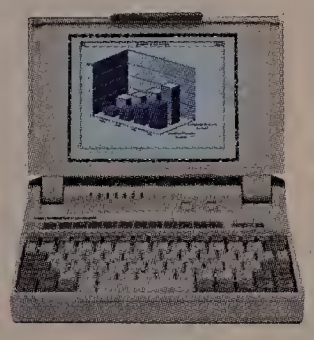
OF POWER.

MastersPort 286



MastersPort 386SX

SupersPort 486SX

SupersPort 486

LOOK INTO THE POWER OF 5 NEW PORTABLES

	MastersPort™ 286	MastersPort 386SX	MastersPort 386SL	SupersPort® 486SX	SupersPort 486
Processor--Speed	286 – 12/6MHz	386SX – 20/10MHz	386SL - 20/5/0MHz	486SX – 20/10MHz	486 – 25/12.5MHz
Co-Processor	80C287 socket	80387SX socket	80387SX socket	Upgradeable to 486-20MHz	Integrated
Memory (Std./Max.)	1MB/2MB	2MB/4MB	2MB/8MB (64K cache)	4MB/16MB	4MB/16MB
Hard Disk Drive	30MB	60MB	60MB	120MB	120MB
LCD/Size	Backlit/8.85"	Backlit/8.85"	Backlit/8.85"	Edgelit/10.7"	Edgelit/10.7"
Video/Gray Scales	VGA/16	VGA/16	VGA/32	VGA/64	VGA/64
Power Management	• Suspend/Resume • Sleep mode • Low battery operation	• Suspend/Resume • Sleep mode • Low battery operation	*Premier System Management*™ • Standby/Resume • Rest/Resume • Panic Save • Unattended communications	*Intelligent Power Management*™	*Intelligent Power Management*
Software	MS-DOS® included	MS-DOS included	MS-DOS pre-installed; Microsoft® *Windows*™ v. 3.0 included	MS-DOS and Microsoft *Windows* v. 3.0 pre-installed	MS-DOS and Microsoft *Windows* v. 3.0 pre-installed
Weight (with battery)	6.6 lbs.	6.6 lbs.	6.8 lbs.	15 lbs.	15 lbs.

ZENITH data systems
Groupe Bull

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Circle 290 on reader service card

Share Peripherals Without Networking

Rex Farrance

If all you need to do is enable your work group to share peripherals, a LAN may not be necessary. Peripheral-sharing hardware—boxes with multiple serial and parallel ports that give several PCs access to an array of peripherals—may be the most cost-effective solution. The switching options run from inexpensive mechanicals to more sophisticated and convenient electronics. High-end switchers add communications features and let you share modems.

If every PC is within 15 feet of the printer, you can use a fast parallel connection. But to get across the office (as far as 200 feet), you have to use a serial link. Install the right software drivers, and even Macs and other small computers can share peripherals with your PCs.

Printer-Sharing Solutions

Laser Printer Add-Ins

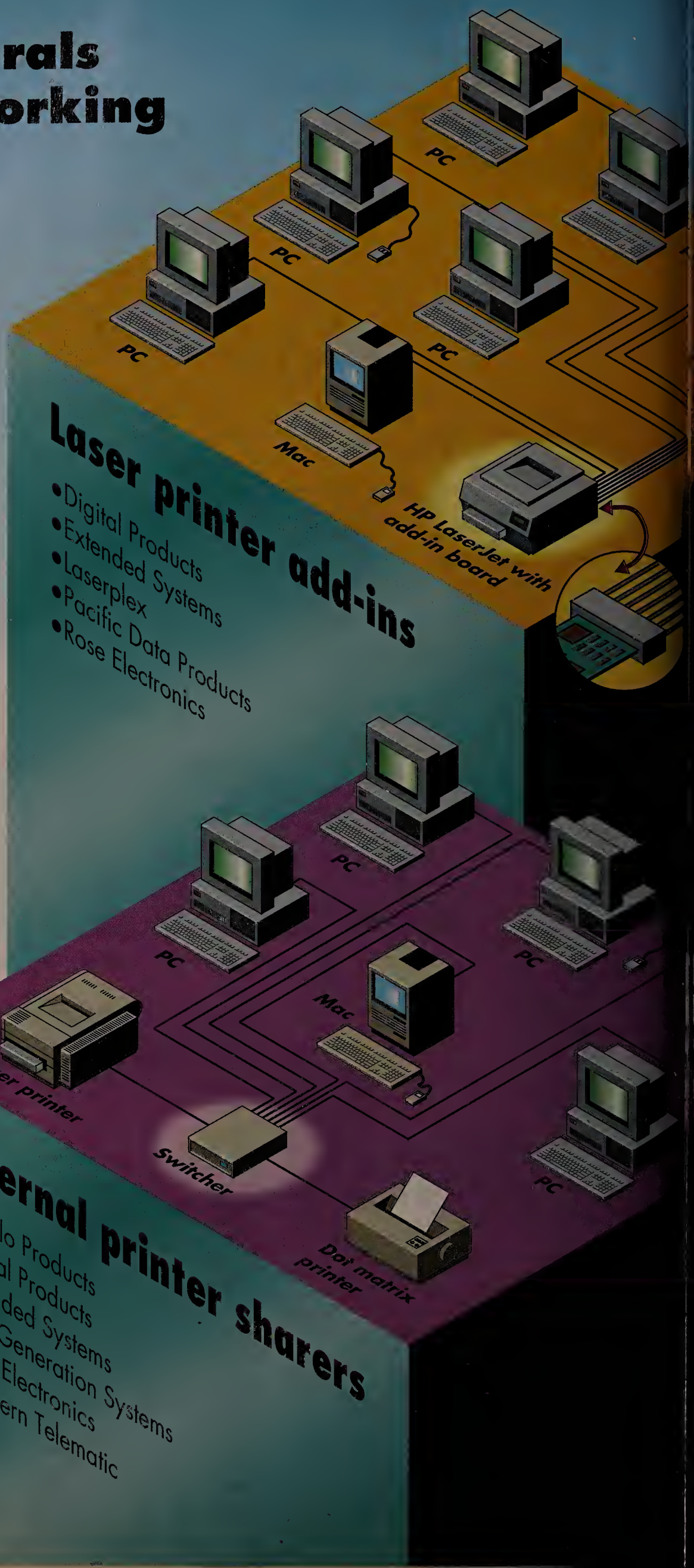
HP LaserJets and some other printers accept printer-sharing boards, which let as many as eight computers share one printer. Right now, some boards can handle 1.2MB of buffer memory, enough to queue dozens of average text files. And some units provide automatic switching between LaserJet emulations and PostScript. Costs run from $50 to $200 per connection without cabling, depending on vendor and configuration.

External Printer Sharers

If your group needs to share multiple printers, one of an assortment of external switchers may fill the bill. Users who print large graphics files will want to add a lot of memory—one switcher's buffer holds 16MB. And you can choose from many devices offering a host of computer-to-printer configurations. Most units let you daisy-chain to add users. Again, prices vary from $50 to $200 per connection.

Peripheral-Sharing Devices

These products add the ability to share a modem or to communicate directly from computer to computer. And like external printer sharers, most can be daisy-chained. Costs range from about $50 per connection to more than $300.



JEFF BERLIN

WHERE TO BUY

Buffalo Products Inc.
2805 19th St. SE
Salem, OR 97302
800/345-2356,
503/585-4505 (fax)
Reoder service no. 687

Extended Systems
6123 N. Meeker Ave.
Boise, ID 83704
800/235-7576,
406/587-9170 (fax)
Reoder service no. 689

Laserplex Corp.
304 S. Abbott Ave.
Milpitas, CA 95035
408/946-2298,
408/946-0232 (fax)
Reoder service no. 691

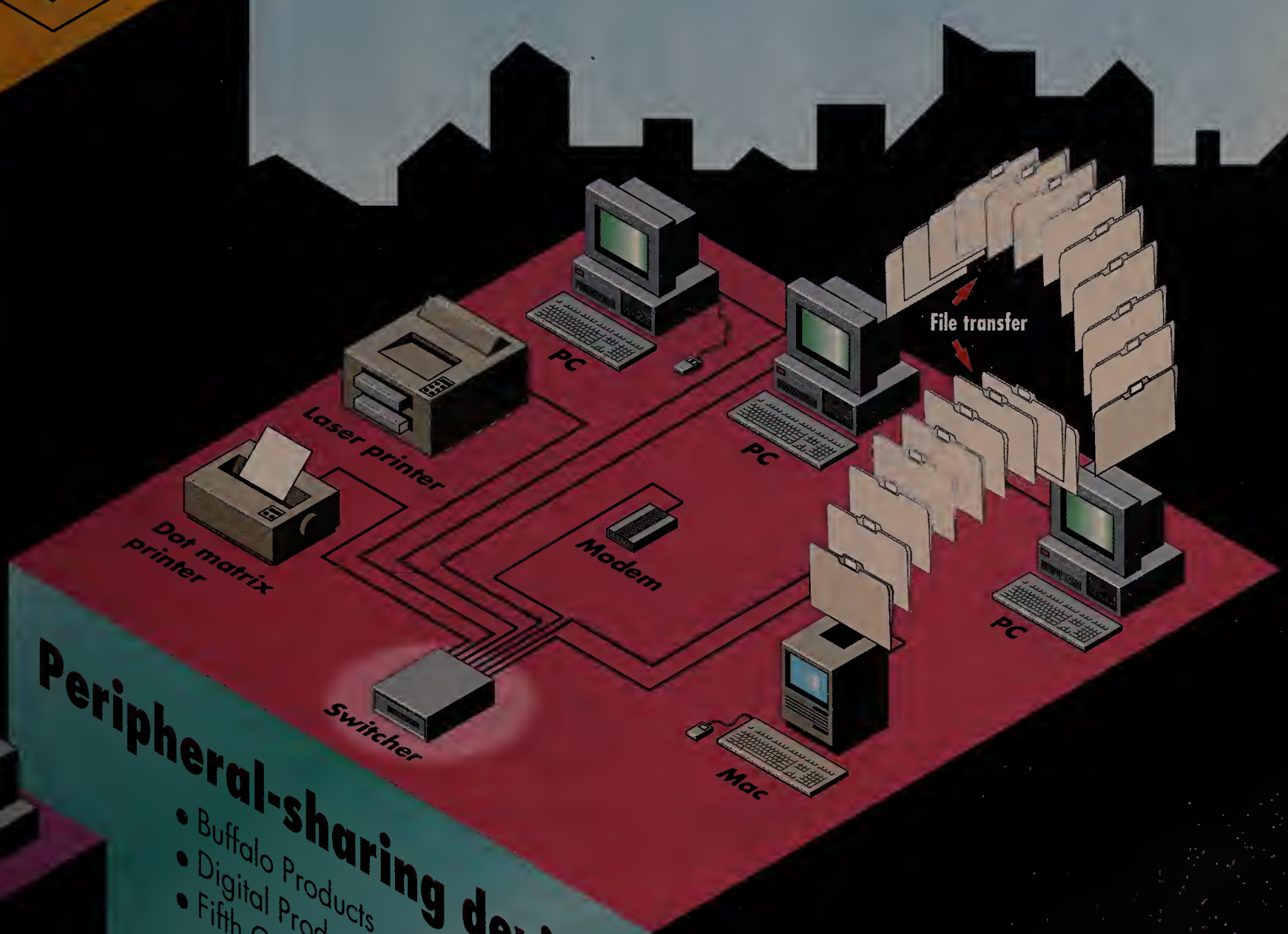
Rose Electronics
10850 Wilcrest Dr. #900
Houston, TX 77099
800/333-9343,
713/933-0044 (fax)
Reader service no. 693

Digital Products Inc.
108 Water St.
Watertown, MA 02172
800/243-2333,
617/924-7814 (fax)
Reader service no. 688

Fifth Generation Systems, Inc.
10049 N. Reiger Rd.
Baton Rouge, LA 70809
800/873-4384,
504/295-3268 (fax)
Reader service no. 690

Pacific Data Products
9125 Rehco Rd.
San Diego, CA 92121
619/552-0880,
619/552-0889 (fax)
Reader service no. 692

Western Telematic Inc.
5 Sterling
Irvine, CA 92718
800/854-7226,
714/583-9514 (fax)
Reoder service no. 694



Peripheral-sharing devices

- Buffalo Products
- Digital Products
- Fifth Generation Systems
- Rose Electronics
- Western Telematic

2400-BAUD MODEMS

NO LONGER A LUXURY ITEM, 2400-BAUD MODEMS ARE NOW THE MOST COST-EFFECTIVE CHOICE FOR TELECOMMUNICATIONS. HERE'S HOW TO FIND ONE THAT'S FAST AND ERROR FREE.

DAVID SUTER

BRETT GLASS

Would your business benefit from instant access to stock quotes? Computerized airline reservations? Up-to-the-minute news reports? Would you like to share spreadsheet files with workers on the opposite coast? All this and more becomes possible with a *modem*—a device that enables your computer to talk to other computers over telephone lines.

A modem's bytes-per-second speed is roughly one-tenth its *baud rate*, and the most popular and cost-effective modems today are those with a baud rate of 2400—in other words, those that can send and receive about 240 characters per second (cps). You can still buy a 1200-baud modem, but with some 2400-baud models selling for under $100 on the street, why accept less?

If you're planning to send vast amounts of data regularly to distant area codes, you might want to consider a 9600-baud modem. But that sort of speed costs money—anywhere from $600 to $1200—while a first-class 2400-baud modem, with error correction, and data compression that effectively increases data transmission, lists for about $300 to $400.

THE INTERNAL QUESTION

There are two kinds of modems; those that go inside your computer (internal), and those that connect on the outside (external); so you'll have to choose between losing a slot in your PC and giving up some desk space. Most external modems fit under a telephone, however, so you may not lose any space at all.

External modems have other advantages. Most have status lights that tell you what's going on during a communications session—whether you're sending or receiving data, if you're still connected, and so on. And unlike internal modems, externals work with any personal computer, including Micro Channel-based PS/2s, laptops, and Macintoshes, and they can be moved

easily from one computer to another.

External modems connect to a serial interface, so if you need that port for a mouse or a serial LAN, an internal modem may make more sense. Likewise, internal modems don't use an AC power outlet, while external models, with their bulky power connectors, often take up two. Internal modems are also cheaper, usually retailing for about $40 less than an equivalent external model; at the lower street prices you actually pay, the difference will probably be between $20 and $30.

Whether your modem runs from the inside or outside, a few added controls can make life easier. For instance, how do you adjust the volume? You can control most modems' volume via your communications software, but nothing is easier than a simple dial.

SPEED AND ACCURACY

Software compatibility isn't an issue with the 2400-baud modems listed here; they're all Hayes compatible. And all meet established hardware standards, so they'll talk to virtually any 300-, 1200-, or 2400-baud modem. But extra *error correction* and *data compression* features require their own compatibility.

The noises that annoy you when you talk on the telephone—static, other conversations, a kid picking up an extension—produce transmission errors when you use a modem. Your software uses protocols like XMODEM or ZMODEM to check for and correct these errors, but only when you send binary files (complete files of any sort, as opposed to straight ASCII text). And these protocols slow transmissions down. If you plan to send or receive a lot of ASCII text or require top throughput when swapping files, you'll want error correction built into your modem.

There are two common standards for error correction, MNP level 4 and V.42,

2400-BAUD EXTERNAL MODEMS

				SWITCHES			STATUS LIGHTS	
Manufacturer	Product	Price	Warranty (years)	Power	Voice/ data	Answer/ originate	Power	Off hook
ATI TECHNOLOGIES	2400ETC.E	$239	2	Y	Y	Y	Y	Y
BEST DATA PRODUCTS	Smart One 2400X	$169	2	Y	N	N	Y	Y
	Smart One 2400XMNP	$249	2	Y	N	N	Y	Y
CARDINAL TECHNOLOGIES	MB2400EX	$179	1	Y	N	N	Y	Y
	2400MNP	$229	1	Y	N	N	Y	Y
	2400V42	$289	1	Y	N	N	Y	Y
COMPUTER FRIENDS	Lightspeed 2400LE	$159	2	Y	N	N	N	Y
DATATREK	2424ADH Plus	$395	2	Y	N	N	Y	Y
	2424AMH Plus	$495	2	Y	N	N	Y	Y
	624 Modem	$549	2	Y	Y	Y	Y	Y
EVEREX	Evercom 24E	$269	2	Y	N	N	N	Y
	Evercom 24E+	$299	2	Y	N	N	N	Y
FASTCOMM COMMUNICATIONS	FDX 2448	$649	2	Y	N	N	Y	Y
GALAXY NETWORKS	Pioneer V.22bis/V.42bis	$299	2	Y	N	N	Y	Y
GVC TECHNOLOGIES	SM-24V	$269	5	Y	N	N	N	Y
HAYES MICROCOMPUTER PRODUCTS	Smartmodem 2400	$499	2	Y	Y	N	N	Y
	V-series Smartmodem 2400	$649	2	Y	N	N	N	Y
LOGICODE TECHNOLOGY	Quicktel 2400EX	$160	5	Y	N	N	Y	Y
MICROCOM	QX/2400t	$699	1	N	Y	Y	Y	Y
MULTI-TECH SYSTEMS	MultiModem 224E	$499	2	Y	Y	Y	N	Y
	MultiModem 224E7	$549	2	Y	Y	Y	N	Y
NEC TECHNOLOGIES	N2431E	$575	1	Y	Y	N	N	Y
OMNITEL	2400SD	$249	2	Y	N	N	N	Y
	2400s+	$299	2	Y	N	N	N	Y
PRACTICAL PERIPHERALS	PPM 2400 Pocket Modem	$159	5	N	N	N	Y	N
	PM2400SA	$239	5	Y	N	N	Y	Y
	PM2400SA V.42bis	$299	5	Y	N	N	Y	Y
PROMETHEUS PRODUCTS	ProModem 2400G	$249	2[3]	Y	N	N	Y	Y
	ProModem 2400 Plus	$299	2[3]	Y	N	N	Y	Y
	ProModem 2400 Mini	$189	2[3]	Y	N	N	Y	Y
RACAL-VADIC	2400VP	$595	1	N[4]	Y	Y	Y	N
	VI2422PA	$695	1	N[4]	Y	Y	N[5]	N[5]
	2400PA Model 2	$695	1	N[4]	Y	Y	N[5]	N[5]
SUPRA	SupraModem 2400	$150	5	Y	N	N	N	Y
	SupraModem 2400 MNP	$200	5	Y	N	N	N	Y
	SupraModem 2400 Plus	$240	5	Y	N	N	N	Y
TELENETICS	T-NET 24X	$169	5	Y	N	N	N	Y
	TC921S-24	$495	5	Y	Y	Y	N	Y
U.S. ROBOTICS	Sportster 2400	$239	2	Y	N	N	N	N
	Sportster 2400 MNP	$299	2	Y	N	N	N	N
	Courier 2400e	$599	2	Y	N	N	N	Y
VEN-TEL	2400 Plus II	$499	5	Y	Y	N	Y	Y
ZOOM TELEPHONICS	Zoom/Modem MX2400R	$129	7	Y	N	N	Y	Y
	Zoom/Modem V.42bis	$300	2	Y	N	N	Y	Y

[1] Proprietary version.
[2] Extra-cost option.
[3] Two-year standard warranty; 30-day money-back guarantee.
[4] Twelve dual-function keys permit controlling all functions from panel.
[5] Eight-character LCD panel.

For more information about all products in this table, circle reader service no. 907.

DAVID SUTER

Data terminal ready	Carrier detect	Send/ receive data	Auta-answer	Madem ready	ERROR CORRECTION/DATA COMPRESSION MNP-4	MNP-5	V.42	V.42bis	Bundled cammunicotions saftware	Volume cantrolled by hardware	Power-on self-test	Callback security	Reader service number
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	716
Y	Y	Y	Y	Y	N	N	N	N	Bitcom	Y	N	N	717
Y	Y	Y	Y	Y	Y	Y	N	N	Bitcom	Y	N	N	717
Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	718
Y	Y	Y	Y	Y	Y	Y	N	N	N	N	Y	N	718
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	718
Y	Y	Y	Y	Y	Y	Y	N	N	QuickLink II	Y	Y	N	719
Y	Y	Y	N	Y	N	N	N	N	N	Y	Y	N	720
Y	Y	Y	N	Y	Y	N	N	N	N	Y	Y	N	720
Y	Y	Y	N	Y	Y	Y	N	N	N	Y	Y	Y	720
Y	Y	Y	N	Y	N	N	N	N	Procomm[1]	N	Y	N	721
Y	Y	Y	Y	Y	N	N	Y	Y	Procomm[1]	N	Y	N	721
Y	Y	Y	Y	Y	Y	Y	N[2]	N[2]	N	Y	Y	N	722
Y	Y	Y	Y	Y	Y	Y	Y	Y	Telix	N	Y	N	723
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	724
Y	Y	Y	Y	Y	N	N	N	N	Smartcom II[2]	Y	Y	N	725
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	725
Y	Y	Y	Y	Y	N	N	N	N	QuickLink II	N	Y	N	726
Y	N	Y	N	N	Y	N	Y	Y	N	Y	Y	N	727
Y	Y	Y	N	N	Y	Y	Y	N	N	Y	Y	Y	728
Y	Y	Y	N	N	Y	Y	Y	Y	N	Y	Y	Y	728
Y	Y	Y	N	N	Y	Y	N	N	N	N	Y	N	729
Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	730
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	730
N	N	N	N	N	N	N	N	N	N	N	Y	N	731
N	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	731
N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	731
Y	Y	Y	Y	Y	N	N	N	N	N	Y	Y	N	732
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	732
Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	732
N	Y	Y	Y	Y	Y	Y	N	N	N	N	Y	N	733
N[5]	N[5]	N[5]	N[5]	N[5]	Y	Y	Y	Y	N	N	Y	Y	733
N[5]	N[5]	N[5]	N[5]	N[5]	Y	Y	N	N	N	Y	Y	N	733
Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	734
Y	Y	Y	Y	Y	Y	Y	N[2]	N[2]	N	N	Y	N	734
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	734
Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	735
Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	N[2]	735
N	Y	N	N	Y	N	N	N	N	N[2]	N	N	N	736
N	Y	N	N	Y	Y	Y	N	N	N[2]	N	N	N	736
Y	Y	Y	Y	Y	Y	Y	N	N	N[2]	Y	N	N	736
Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	737
Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	738
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	738

2400-BAUD INTERNAL MODEMS

Manufacturer	Product	Price	PS/2 price	Warranty (years)	ERROR CORRECTION/ DATA COMPRESSION MNP-4	MNP-5	V.42	V.42bis	Bundled communications software	Volume controlled by hardware
ATI TECHNOLOGIES	2400ETC.I	$199	$199	2	Y	Y	Y	Y	Mirror II	N
BEST DATA PRODUCTS	Smart One 2400B	$99	$99	2	N	N	N	N	Bitcom	Y
CARDINAL TECHNOLOGIES	MB2450	$189	$239	1	N	N	N	N	Bitcom or Flashlink	N
	2450MNP	$199	$299	1	Y	Y	N	N	Bitcom or Flashlink	N
	2450v42	$189	$299	1	Y	Y	Y	Y	Bitcom or Flashlink	N
DATATREK	Half-Pak #24	$345		2	N	N	N	N	N	N
	Full-Pak #24M	$445		2	Y	N	N	N	N	Y
EVEREX SYSTEMS	Evercom 24	$129	$299	2	N	N	N	N	Procomm[1]	N
	Evercom 24+	$249	$349	2	N	N	Y	Y	Procomm[1]	N
GALAXY NETWORKS	Pioneer V.22bis/V.42bis	$259		2	Y	Y	Y	Y	Telix	N
GVC TECHNOLOGIES	SM-24HV	$199		5	Y	Y	Y	Y	Communications by Crosstalk	Y
HAYES MICROCOMPUTER PRODUCTS	V-series Smartmodem 2400B V.42	$599		2	Y	Y	Y	Y	N[2]	N
	V-series Smartmodem 2400B X.25	$599		2	Y	Y	Y	Y	N[2]	N
LOGICODE TECHNOLOGY	Quicktel 2400 H	$112		5	N	N	N	N	QuickLink II	N
	Quicktel V.22bis/V.42bis	$210		5	Y	Y	Y	Y	QuickLink II	N
MICROGATE	MV22i	$139		1	Y	Y	Y	Y	N	N
MULTI-TECH SYSTEMS	MultiModem224EC7B	$449	$499	2	Y	Y	Y	Y	Procomm	Y
OMNITEL	2400HB	$199	$249	2	N	N	N	N	Procomm	N
	2400i+	$249	$299	2	Y	Y	Y	Y	Procomm	N
PRACTICAL PERIPHERALS	PM2400	$189	$299	5	N	N	N	N	Procomm	N
	PM2400 V.42bis	$249		5	Y	Y	Y	Y	QuickLink II	N
PROMETHEUS PRODUCTS	ProModem 2400B	$169		2[3]	N	N	N	N	Mirror II	Y
	ProModem 2400B Plus	$249		2[3]	Y	Y	Y	Y	Mirror II	Y
RACAL-VADIC	LC2400PC	$395	$395	1	Y	N	N	N	N	N
SUPRA	SupraModem 2400i	$100		5	N	N	N	N	Mirror II	N
	SupraModem 2400i MNP	$150		5	Y	Y	N[2]	N[2]	Mirror II	N
	SupraModem 2400i Plus	$200		5	Y	Y	Y	Y	Mirror II	N
TELENETICS	T-NET 24I	$139		5	N	N	N	N	N	N
U.S. ROBOTICS	Sportster 2400	$199		2	N	N	N	N	Communications by Crosstalk	N
	Sportster 2400 MNP	$249		2	Y	Y	N	N	Communications by Crosstalk	N
	Courier 2400e	$549	$499	2	Y	Y	N	N	N[2]	N
VEN-TEL	PCM 2400E	$399	$399	5	Y	Y	N	N	N	Y
ZOOM TELEPHONICS	Zoom/Modem HC2400R	$129		7	N	N	N	N	Procomm	N

[1] Proprietary version.
[2] Extra-cost option.
[3] Two-year standard warranty; 30-day money-back guarantee.

For more information about all products in this table, circle reader service no. 906.

and it pays to get a modem with both. Error correction works only if the modem on the other end has the same scheme as yours, and these standards are not universally supported, so having both increases your chances of correcting errors.

If your modem offers data compression, you can cut the time it takes to send and receive data, saving money on phone bills and fees for on-line services. But as with error correction, both modems must support the same standard. The two most common compression schemes are MNP 5, which effectively doubles transmission speed, and V.42bis, which almost triples it. All MNP 5 modems support MNP 4, and all V.42bis modems support V.42. Virtually all V.42bis modems support MNP 4 and MNP 5 as well. But ask your vendor if a modem implements MNP 5 in hardware. Some vendors include a software version of MNP 5 which isn't as fast as a hardware version.

MODEM CONTROL

Modems can't work on their own; they need communica-

DAVID SUTER

Power-on self-test	Callback security	Reader service number
Y	N	697
N	N	698
Y	N	699
Y	N	699
Y	N	699
Y	N	700
Y	N	700
Y	N	701
Y	N	701
Y	N	723
Y	N	703
Y	N	704
Y	N	704
Y	N	705
Y	N	705
Y	N	706
Y	Y	707
Y	N	708
Y	N	708
Y	N	709
Y	N	709
Y	N	710
Y	N	710
N	N	711
Y	N	712
Y	N	712
Y	N	712
N	N	713
N	N	736
N	N	736
N	N	736
N	N	715
Y	N	739

tions software, and some modem makers bundle such programs free. But while software can help you get started, don't be too quick to reject a modem simply because it doesn't come with any. Bundled programs often lack such features as a dialing directory or support for the YMODEM and ZMODEM error-correcting protocols. Unless your requirements are very simple, you may need a more powerful communications package (see "Easier Tools for the On-Line World," April 1991, for more information on communications programs). And if your needs *are* simple, you may be able to get by with the communications module of a program you already own, such as *PC Tools Deluxe, Microsoft Works,* or *Sidekick 2.0.*

If you plan to access your home or office system from someplace else, say, with a remote control program like *pcAnywhere,* you may want a modem with *callback security.* Instead of just letting anyone who calls in connect to the computer, a modem with callback security *calls back* a predetermined number, allowing connections from that location only.

One alternative to a standard modem you may want to consider is a fax-modem. Many fax boards now offer a built-in 2400-baud modem as an option, giving you two ways to communicate electronically in one board, and their prices continue to drop. (See "Buyers' Guide: Fax Boards and Fax Gateways," March 1991, for an in-depth discussion and list of products.)

Odds are your modem will come with introductory offers from bulletin boards, news wires, and other services. Log on and enjoy. You may wonder how you ever managed without a modem.

Brett Glass is a contributing editor for PC World. *Cathy Smith and Art Wilcox provided research.*

WHERE TO BUY

ATI Technologies, Inc.
3761 Victoria Park Ave.
Scarborough, Ontario
M1W 3S2 Canada
416/756-0718,
416/756-0720 (fax)

Best Data Products
9304 Deering Ave.
Chatsworth, CA 91311
818/773-9600,
818/773-9619 (fax)

Cardinal Technologies Inc.
1827 Freedom Rd.
Lancaster, PA 17601
717/293-3055 (fax)

Computer Friends
14250 N.W. Science Park Dr.
Portland, OR 97289
800/547-3303,
503/643-5379 (fax)

DataTrek
4505 Wyland Dr. #400
Elkhart, IN 46516
219/522-8000,
219/522-0822 (fax)

Everex Systems, Inc.
Cygnet Technologies
2560 Ninth St. #220
Berkeley, CA 94710
415/486-2600

FastComm Communications Corp.
45472 Holiday Dr.
Sterling, VA 22170
800/521-2496

Galaxy Networks, Inc.
8921 De Soto Ave. #205
Canoga Park, CA 91304
818/998-7851,
818/998-1758 (fax)

GVC Technologies, Inc.
99 Demarest Rd.
Sparta, NJ 07871
201/579-3630,
201/579-2702 (fax)

Hayes Microcomputer Products, Inc.
P.O. Box 105203
Atlanta, GA 30348
404/441-1617,
404/441-1213 (fax)

Logicode Technology, Inc.
1817 De Havilland Dr.
Newbury Park, CA 91320
805/499-4443,
805/499-8588 (fax)

Microcom, Inc.
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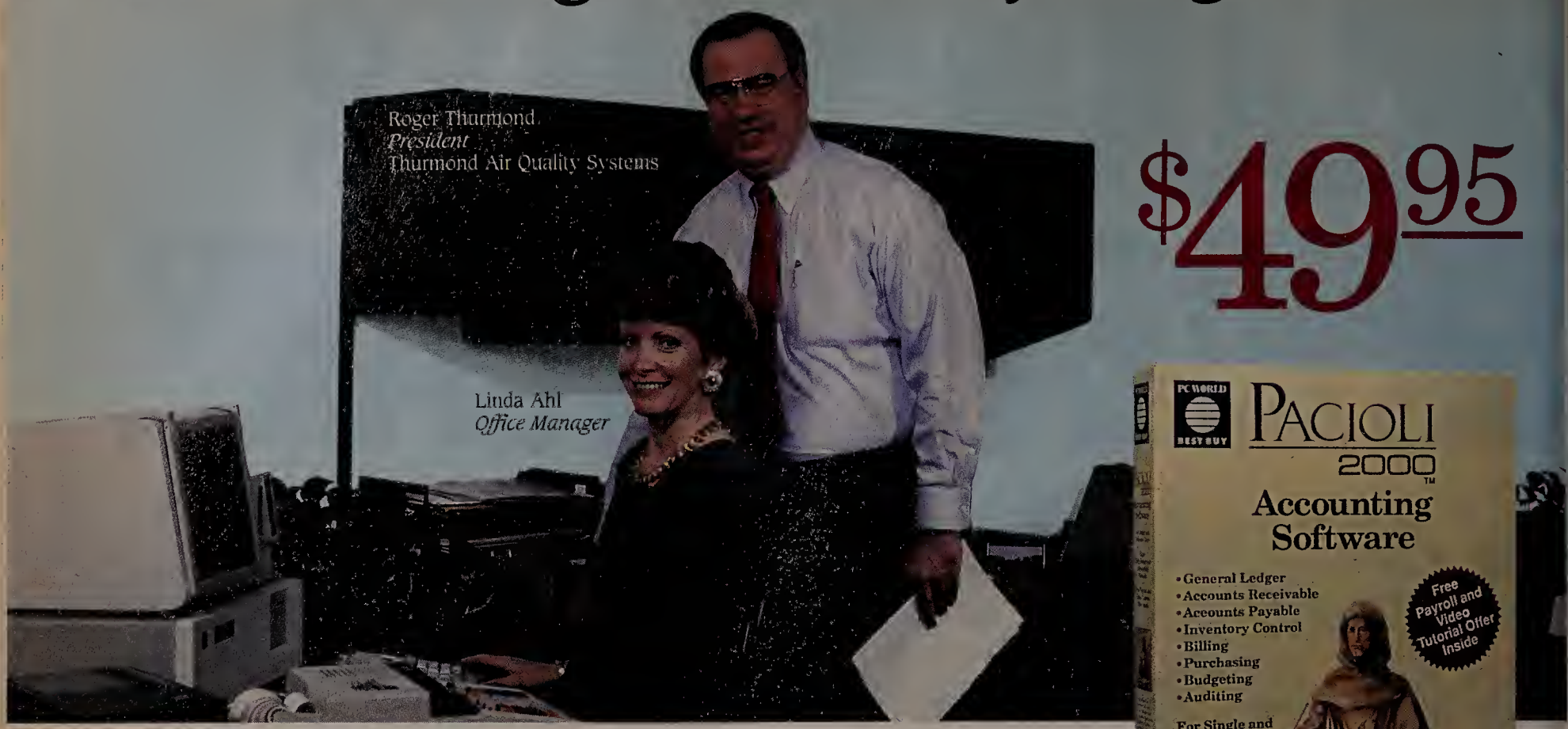

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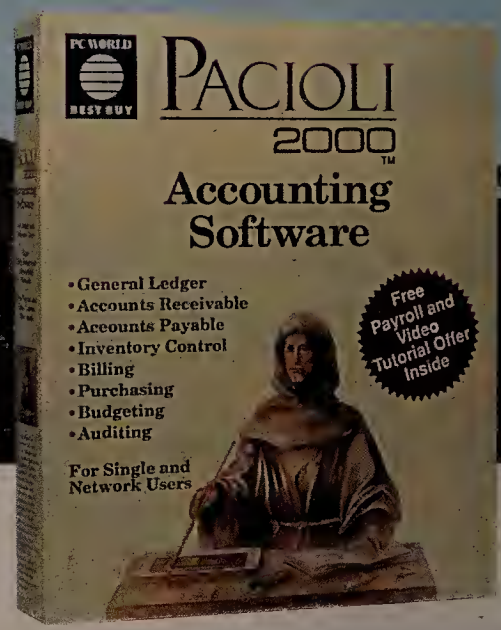

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Circle 7 on reader service card

Nine Tips for Better Windows Networking

Windows may be user-friendly, but it's fussy about networks. These tips from a LAN pro can save you hassles and headaches.

Robert Lauriston

Windows

If you believe Bill Gates, *Windows* will be running everything except stoplights and toaster ovens by 1993. But getting it to run quickly and smoothly with a local area network can be a pain. If you're a *Windows* user hooked up to a LAN, check out these tips we've culled from Microsoft's recently released *Windows Resource Kit* and our own hard-fought experience.

▶ Pick your own directory

A DOS program's PIF file can specify its start-up directory, which makes finding data files easier. *Windows* programs don't have PIF files, so you must trick *Windows*.

Select the icon of the desired *Windows* program and then *File Properties*. At the Command Line field, enter the path to the data directory *before* the program file name, such as **F:\USERS-\JSMITH\XL-DOCS\EXCEL.EXE**; then select *OK*. *Windows* won't find *Excel* in that directory and will yelp 'Invalid Path'. Click *OK* to override the warning. The next time you run *Excel*, the File Open dialog box will default to the \XL-DOCS subdirectory. Note: The directory containing the program file must be referenced in your PATH statement.

▶ Free up memory for multitasking DOS applications

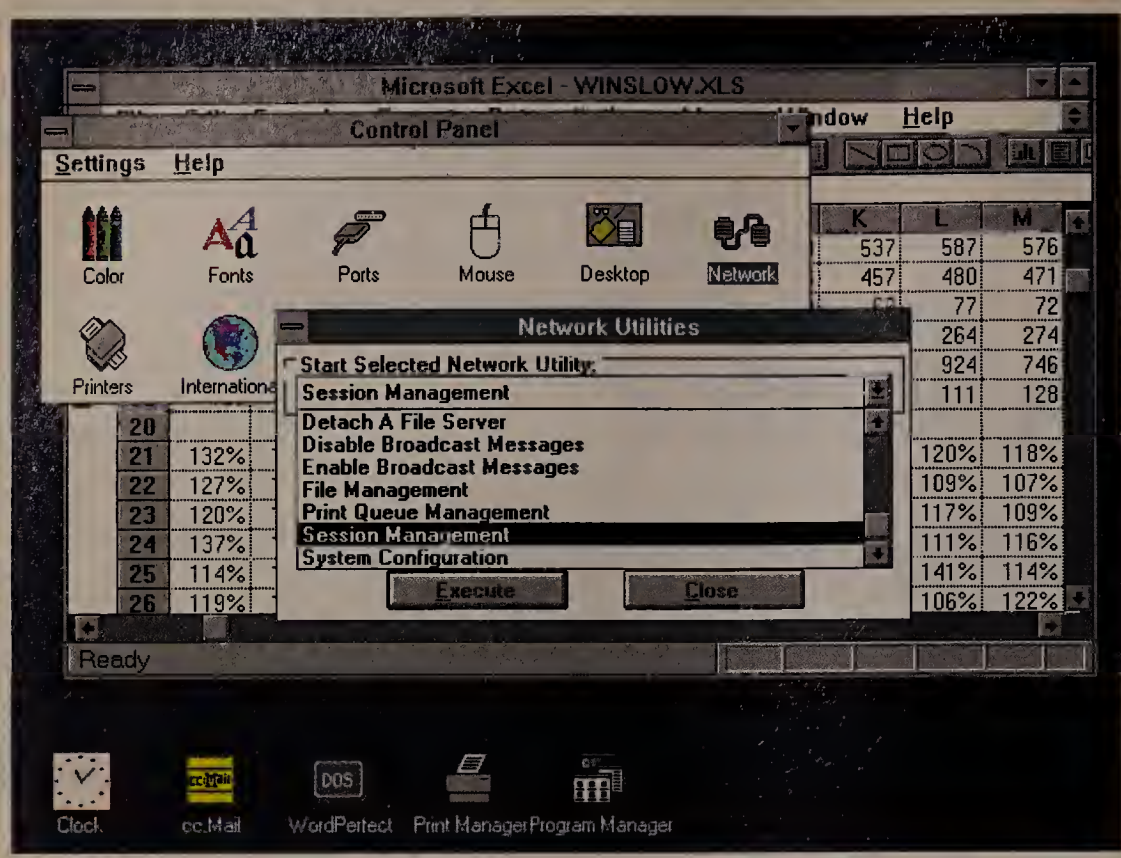
Most network operating systems let you load their drivers and shells into extended or expanded memory, freeing up conventional memory for DOS applications. How much RAM you'll recover varies. NetWare will return at least 32K if you replace NET3.COM with XMSNET3.EXE or EMSNET3.EXE. If your network doesn't offer this option, your LAN vendor may know of a third-party utility that can do the job.

▶ Run diskless workstations in 386-enhanced mode

Most diskless 386 workstations can run *Windows* only in standard or real mode, and that means you can't multitask DOS programs. But if you've got 2MB of RAM with 1MB as extended, you can slip into 386-enhanced mode by loading Microsoft's RIPLMEM utility, then starting *Windows* with the **WIN/3** command. RIPLMEM is available free from Microsoft at 800/426-9400.

▶ Navigate in and out of server subdirectories

Since NetWare's subdirectory lists don't include the ".." entry for the parent



Adding a few simple lines to NETWARE.INI, as described in tip 6, puts these useful NetWare utilities into the Control Panel's Network menu.

directory, there's no way to back out of a directory once you've gotten into it with the File Manager or a file dialog box. The solution? Create a "shell configuration" file. Load Notepad and type the single line **SHOW DOTS=ON**.

Save the file as SHELL.CFG, and make sure you store it in the same directory where your NetWare drivers are stored. Then edit your log-in batch file so it switches to that directory before loading the drivers.

▶ Give Windows breathing room for multitasking

When you try to run several programs at once, NetWare may shriek 'No available files'. That means the applications have tried to open more than 40 files on the server—NetWare's default limit. Enter **FILE HANDLES=60** on a line by itself in SHELL.CFG, and you should be able to multitask in peace.

▶ Put NetWare utilities at your fingertips

Only a couple of NetWare's utilities are listed when you double-click the Network icon in the Control Panel, but it's easy to add more. Open NETWARE.INI with the Notepad, locate the [MSW30-Utils] section, and reference the desired utilities using the *menu title=program command* format. For example, to add SYSCON, type:

System Configuration=syscon.exe

If you create PIF files for these programs, you can reference them instead.

Save the file and restart *Windows*. To access the utilities, double-click the Control Panel's Network icon, then click the scroll button to the right of the field that is below Start Selected Network Utility:.

▶ Speed Up File Manager

Most users want to view only the files in their personal volume on the network server. But if you click a server drive icon, the File Manager automatically logs on to the drive's root and scans the entire volume, listing directories you probably can't even access.

To keep applications mapped to the right directories—and to speed up operations—restrict File Manager to those directories you want to view. Insert the MAP ROOT command in your login script. For example, MAP ROOT F:=SYS:USERS\JSMITH displays the contents of \USERS\JSMITH as the contents of drive F:.

▶ Keep Windows and DOS sessions in sync

By default, *Windows* and DOS applications run under *Windows* keep track of NetWare drive mappings independently. So if you add a network drive using the Connect Net Drive command in the File Manager, *Windows* applications (and DOS programs launched thereafter) can access it, but DOS applications already running can't. Likewise, network drives attached with one DOS program can't be seen by *Windows* or other DOS programs.

To keep all drive mappings in sync, add **NetwareShareHandles=true** to the [NetWare] section of SYSTEM.INI. Once you restart *Windows*, connecting or disconnecting a drive in one session will update all the others.

▶ Avoid printer problems

Some of NetWare's default print job settings can foul up printing from *Windows* applications. Run NetWare's PRINTCON utility, and make sure all the print job configurations used with *Windows* have Auto Endcap and Enable Timeout set to No (otherwise, your print jobs may stop partway through); set Suppress Form Feed to Yes (to avoid feeding a blank sheet of paper after every print job). Finally, turn off *Windows'* own print spooler. Open WIN.INI; in the [windows] section, and set the spooler to No.

Robert Lauriston is a contributing editor for PC World.

WHERE TO BUY

Windows 3.0 Resource Kit
Microsoft Corp.
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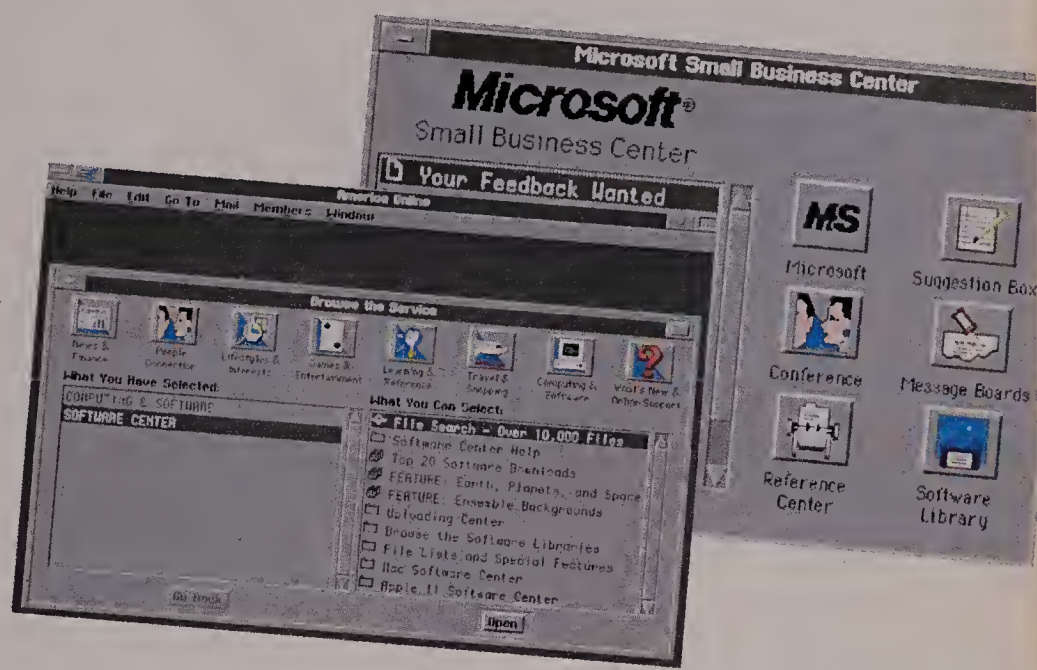

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Words Into Print

Word Processing

Tips for getting the most out of your word processor

This month: Speed group editing using WordPerfect's strike-through and redline features, and add pop-up notes to Word and WordPerfect documents.

George Campbell

Producing a group-written document like a company report, a legal brief, or a marketing piece poses special challenges. Unless you're organized, too many cooks can spoil the broth. Printing the document and passing it from editor to editor takes a lot of time, and too many revision marks on paper can render any document downright unfathomable.

Fortunately, most word processors offer group editing tools to streamline work-group projects. These strike-through, redlining, comparison, and annotation features let each member of the work group add and delete text and make comments without obliterating the original document.

In a typical scenario, an author creates the first draft, then sends it along on disk or via the network to the next editor in line. This editor could use redlining tools to add suggested text, plus an annotation (a pop-up note or comment) to ask a question. The second editor might *strike through* some text for deletion and send the document along to the group leader. After inserting comments, the leader could send it back for another round of editing. Finally, with all changes checked, the redlines, strike-throughs, text, and notes are removed, and the document is printed—for the first time.

Do-It-Yourself Redlining

Even if your word processor lacks redlining, you can devise your own system for group editing. By surrounding inserted comments with special characters or giving them a special attribute (for example, boldface for suggested inserts), you can distinguish edits from regular text at a glance, and even isolate edits made by different people. If your program offers a strike-through, or "strikeover," attribute, you can use it to identify suggested deletions.

After an editor marks text for deletion, the original author can accept the changes by deleting all slashed text, pick and choose what's to be changed, or argue for a compromise. If you use special characters to identify edits, your program's search tools can help locate them for quick deletion; some word processors even let you search for print attributes like boldface and strike-through. (Tip: Make each comment a separate paragraph.)

This makeshift group editing method gets confusing, however, when multiple editors are adding to and deleting from the same text. That's where redlining comes in. Redlining is like marking a document with a red pencil, using special attributes to indicate additions and deletions. In most programs, such as *WordPerfect,* you can review the changes on screen and then press a key to remove all text marked for deletion and convert suggested additions to normal text.

WORD SHORTCUT

A Word About Annotations

To make comments in a *Word 5.x* document, you can create an annotation that includes the date and time along with the editor's initials. Here's how:

1. Move the cursor to the appropriate place in the text and press <Esc>fa.
2. Type in your name or initials and if you want to show the date and time, press <Tab>y for each.
3. Press <Enter>, then type the comment. To return to the document, press <Esc>ja.

You can see your comments at any time—just press <Esc>ja. To delete an annotation, simply delete the annotation marker in the text. Your subsequent annotations will be renumbered automatically.

More advanced redliners, such as the one in *Word for Windows*, work more like spelling checkers. When you review a redlined document, the program brings you consecutively to each edit, and prompts you to accept or refuse each one.

WordPerfect and other programs also provide comparison features that let you work backward to see what changes were made on a document. For example, if one editor changes a document without using the redlining feature, you can have the program compare the current version against the previous one and mark all text that has been added or deleted.

To distinguish between different edits, you can save each version of the document under a different file name. Some programs go one better by offering revision-tracking features that indicate who edited what version and when. Some even automatically stamp each version's file name with an incrementally larger number (REPORT01, REPORT02, and so forth).

Often, when editing, you don't want to change the text by yourself, but rather ask the author a question or give general suggestions. That's when you want pop-up annotations, also called pop-up notes or nonprinting comments. Annotations are much like footnotes, but include a reference, time, and date stamp so you can see who edited what, when. In annotation mode, all the notes appear—otherwise, they remain hidden. If your program lacks annotations, you can use its footnote feature to approximate them. (For more on annotations see this month's Shortcuts.)

WORDPERFECT SHORTCUT

Adding Comments to Documents

To insert nonprinting comments into your *WordPerfect 5*.x document, just use the Document Comment feature. It's a great way for you to gather comments on a document from multiple editors.

1. Place the cursor where you want the comment, then press **<Ctrl>-<F5>cc**.
2. Type the comment in the box that appears and press **<F7>**.
3. If you want to edit the comment, position the cursor just under the comment, then press **<Ctrl>-<F5>ce**.
4. To incorporate the comment as normal text, place the cursor under the comment box, then press **<Ctrl>-<F5>t**.

Redlining the WordPerfect Way

Here's how you use *WordPerfect 5*.x to redline text. First, we'll add text:

1. Move the cursor to where you want to add text, and press **<Ctrl>-<F8>ar**.
2. Type in the new text, which appears in red.
3. Press **<Cursor Right>** to end redlining.

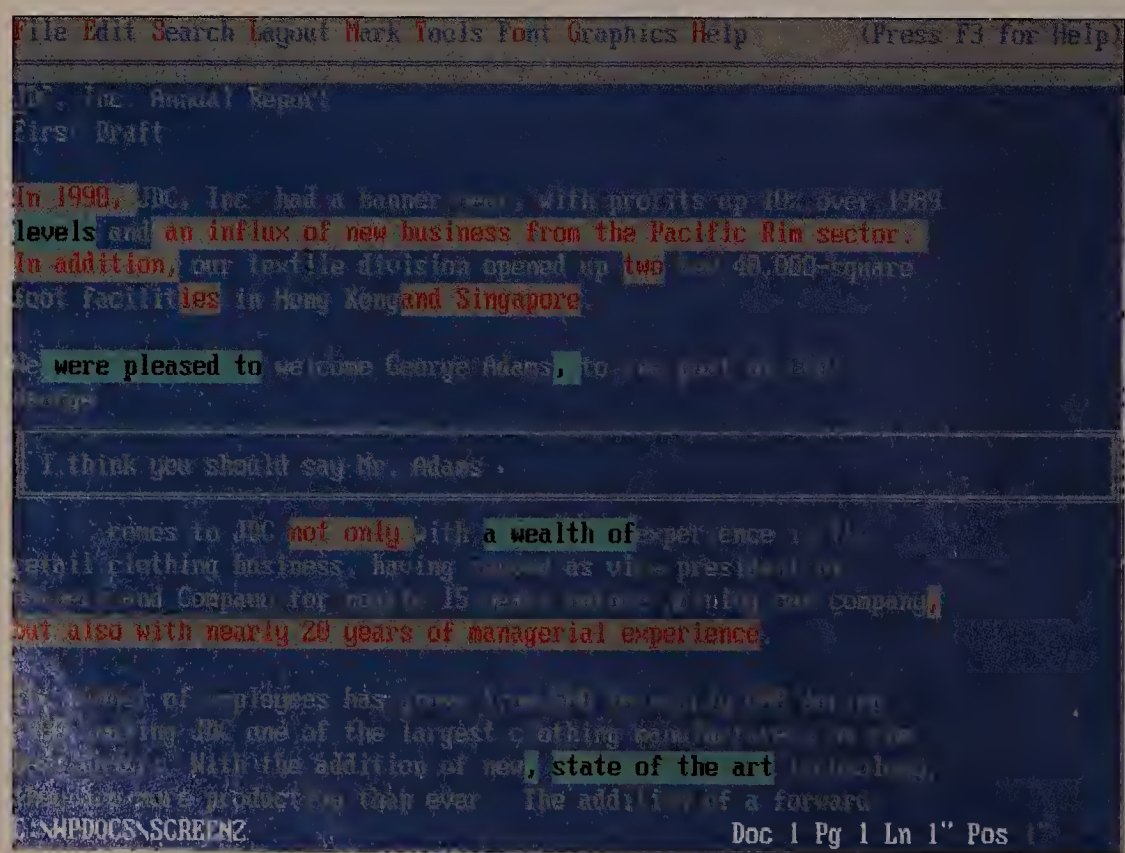
To suggest deletions, you use a similar procedure:

1. Mark the block to delete by pressing **<Alt>-<F4>** and highlighting text.
2. Press **<Ctrl>-<F8>as**; the text appears in a different color.

To remove redline markings, mark the block with **<Alt>-<F4>**, then press **<Delete>y**. To remove markings from the entire document, press **<Alt>-<F5>gry**; this deletes the strikethroughs and converts additions to normal text.

To remove adds and cuts case by case, move the cursor to the first character of the text in question, then press **<Backspace>y**.

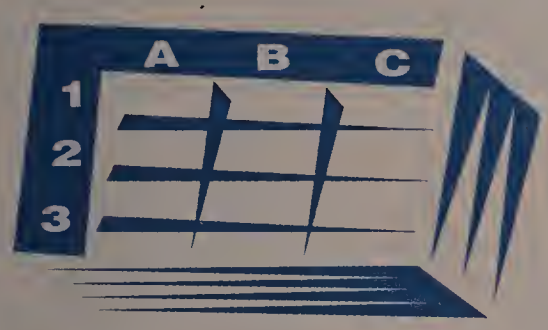
Whether a document is edited by two or twenty, using group editing tools makes it easier to keep track of changes. And you'll save trees in the process. ●



If you write documents in teams, your word processor's redlining feature will make it easier to keep track of suggested revisions, additions, and deletions in the text.

George Campbell is a contributing editor for PC World.

Spreadsheets (A..Z)



Spreadsheets

Practical tips for building better worksheets

This month: 1-2-3 and Quattro users can make macro subroutines part of their macro routine.

Richard Scoville

If you've begun using macros to automate repetitive operations in your worksheets—printing, table building, and so on—macro subroutines can help organize your macros to make them easy to read and edit. In this month's column, we'll introduce subroutines and offer some guidelines for reorganizing your budding macro applications.

So What's a Subroutine?

Think of your macro as a "spreadsheet automaton": Once activated, it executes commands, makes cell entries, and in general does the things you might do from the keyboard. One of the things your macro might do is execute another macro—and a macro called upon by another is termed a subroutine.

For a simple example, take a look at **FIGURE 1**. (To build the model, enter the labels shown in the figure, then put the cell pointer on B1, select */Range Name Create*, type \w, and press **<Enter>** twice. Use /Range Name Create again to give cell B5 the range name DO_IT. Run the macro by pressing **<Alt>-W**.) When the macro encounters the subroutine call in B2, it goes to the cell named in the command (B5) and performs the actions there. When the subroutine is complete, the {return} statement sends the macro back to the cell following the subroutine call (B3).

	A	B
1	\W	{right}
2		{DO_IT}
3		{left}
4		
5	DO_IT	{beep}
6		{return}

FIGURE 1: A macro run by another macro is called a subroutine. Here, the macro \W calls the subroutine DO_IT, located at B5.

Of Menus and Subroutines

Now for a realistic example—the macros that drive a menu-controlled amortization schedule (see **FIGURE 2**). Macro statements are in column I; column H contains labels to identify macro range names; comments are in column J. Organizing the menu options around subroutine calls avoids a tangle of macro commands in the menu area and makes the macros easy to read and edit. For example, look at the menu located in rows 20 to 23. When the menu is active, the labels on row 20 form the menu op-

EXCEL SHORTCUT

Cutting Cell Entries Down to Size

Ralph Soucie

Trying to fit all the columns in a worksheet onto one printed page is a recurring problem for spreadsheet users. Quite often, lengthy text entries are the culprit. *Excel 3.0* provides a fast-acting antidote for this debilitating malady.

Let's suppose you need to print a worksheet that includes a "Remarks" column. Because you must fit the entire worksheet onto one printed page, you have only 25 characters in which to fit that column's data. Most of the cell entries in the column will fit nicely, but there are several that run to over 40 characters.

Select the Remarks column, and set the column width to **25**. Choose *Format Alignment*, then choose *Wrap Text*. Any text beyond the 25-character limit will be bumped, word processing style, to a second line within the cell. *Excel* will selectively increase the row heights as needed—except where the row height has previously been set to a fixed value.

Wrap Text status is an element of cell formatting, so if you change the width later, *Excel* will adjust the line breaks as appropriate.

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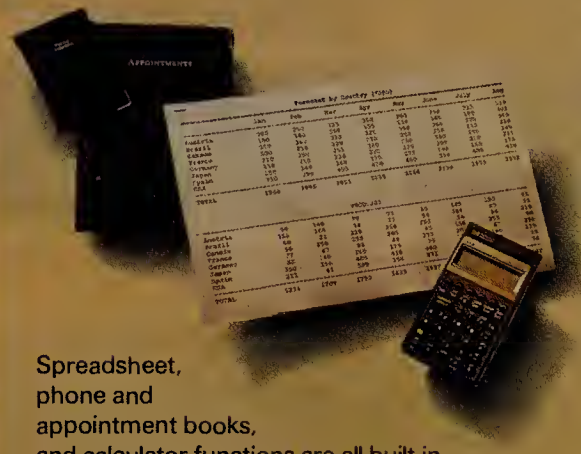

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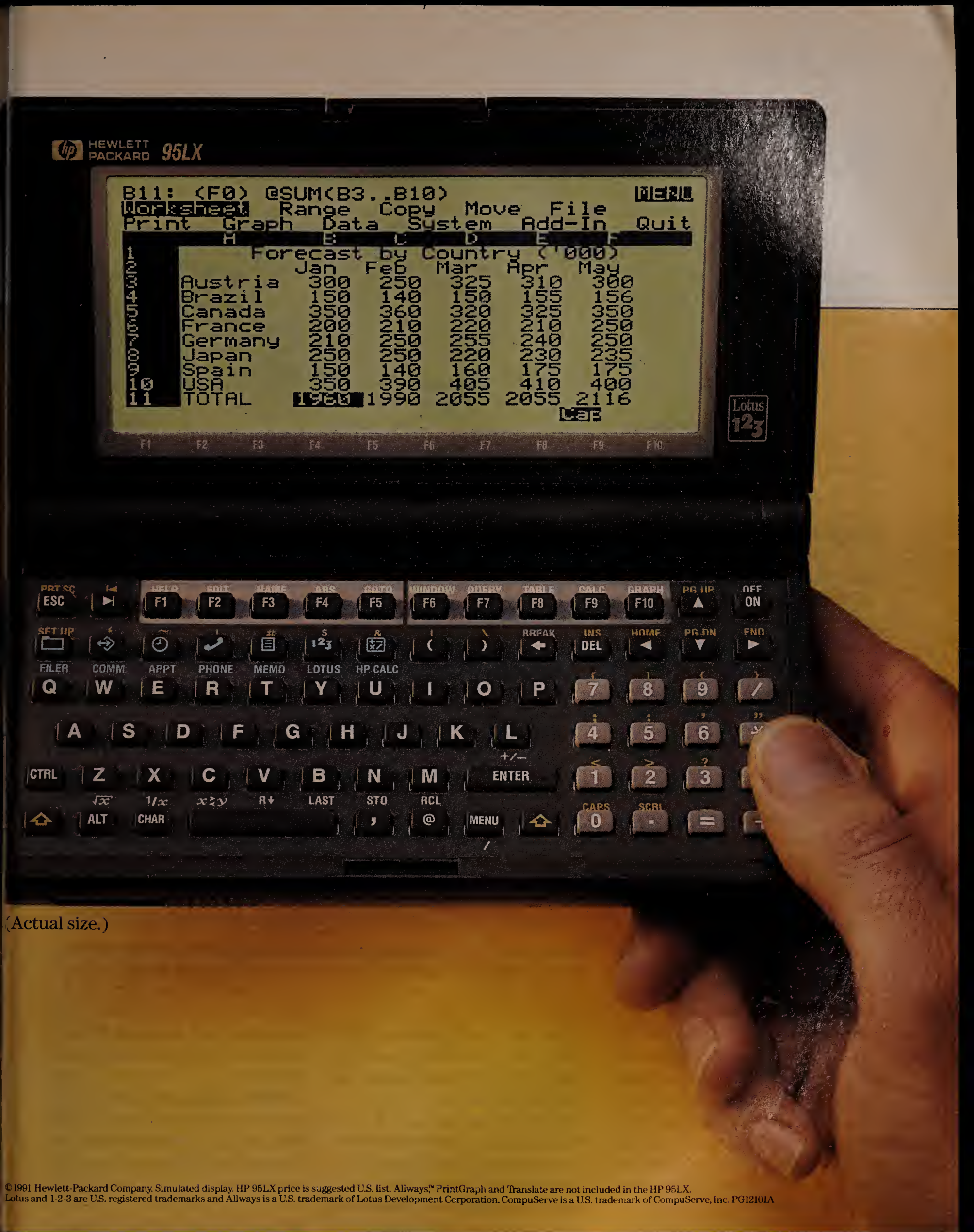

(Actual size.)

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tions; those on row 21 appear as menu prompts. When the user selects an option, *1-2-3* proceeds to the next command in that column, here a subroutine call. For instance, selecting *INPUT* executes the subroutine call in I22 and sends the macro to the \INPUT subroutines in I25. When it's finished, the {return} in I28 sends the macro back to I23.

In fact, the entire menu is itself a subroutine. In I17, the command {menucall \M_MAIN} activates the menu and waits for a user selection. Once the selected subroutine is complete, the {return} in row 23 sends the macro back to the {branch} command in I18, which loops back to the {menucall} in I17 and restarts the menu.

Anatomy of a Subroutine

A well-tempered subroutine has a standard five-part structure: null command; checks; setup; processing; and reset and return.

The null command ({})—see I25, I30, I50, and I57—does nothing save pass macro control along to the next command; thus, it provides a convenient place to insert a new command at the beginning of the subroutine—you won't have to rename the starting cell. Just position the cell pointer on the row just below the null command and insert a row with /Worksheet Insert Row, and you've got room for a new command.

The check commands ascertain that it's OK for the macro to proceed and terminate it if not. Consider the subroutine \TABLE in I30..I46, which rebuilds the amortization schedule when the number of payments has changed. The {if} statement in I31 tests whether the number of loan payments is large enough to process the table; the one in I32 aborts the subroutine if the number of payments entered by the user in I_PERIODS is unchanged since the last time \TABLE was executed (the previous value of I_PERIODS is recorded in the variable \V_PERIODS, cell I48).

The setup statements in I33..I34 prepare for the subroutine by positioning the screen and cell pointer, setting the mode indicator to tell the user to wait until the subroutine is finished, and turning off the screen.

The subroutine proper runs from I35 to I43. It erases the current table, builds a new one with /Data Fill and /Copy, then redefines the range names covering the new table, to be used the next time the table is printed or rebuilt.

Finally, the commands in I44..I46 reset \V_PERIODS to reflect the current table size; reset the mode indicator; turn the screen back on; and return to the menu.

Macros should save your time, not cause you to waste it through endless debugging and head scratching. Subroutines can help you get it right the first time. ●

Richard Scoville and Ralph Soucie are contributing editors for PC World.

```
   G    H                    I                    J        K        L        M    N
11 @MACROS                                                                          =
12
13 Name       Macro                              Comments
14 ---------------------------------------------------------------------------------
15 \M         {break}                            Cancel pending operations
16            {paneloff}                         Turn off command line
17 \M_1       {menucall \M_MAIN}                 Start menus
18            {branch \M_1}                      Branch to menus
19
20 \M_MAIN    INPUT                              TABLE     BROWSE    PRINT     EXIT
21            Enter new data                     Update the View the taPrint the cLeave macros
22            {\INPUT}                           {\TABLE}  {\BROWSE} {\PRINT}  {home}
23            {return}                           {return}  {return}  {return}  {quit}
24
25 \INPUT     {}                                 Insertion line
26            {goto}@INPUT~                      Position cell pointer
27            /riI_INPUT{panelon}~{paneloff}     Data entry
28            {calc}{return}                     Finished
29
30 \TABLE     {}                                 Insertion line
31            {if I_PERIODS<4}{beep}{return}     If table too small, quit
32            {if I_PERIODS=\V_PERIODS}{return}  If table OK, return
33            {goto}@TABLE~{goto}T_PRINT~        Position cell pointer
34            {indicate "WAIT"}{windowsoff}      Set mode indicator & suppress screen
35            {blank T_ROWS}                     Rebuild table
36            {goto}T_ROWS~                       |
37            /df{bs}.{d I_PERIODS-3}~3-1~I_PERIODS~ |
38            /rff0~{end}{d}~                     |
39            {r}{u}                              |
40            /c{end}{r}~{d}.{l}{end}{d}{r 4}-    |
41            {calc}                              |
42            /rncT_PRINT~{esc}.{end}{d}{end}{r}~ Re-create table range names
43            /rncT_ROWS~{esc}.{end}{d}{end}{r}~   |
44            {let \V_PERIODS,I_PERIODS}         Reset table size indicator
45            {indicate}{windowson}              Reset mode indicator and screen
46            {return}
47
48 \V_PERIODS                                240
49
50 \BROWSE    {}                                 Insertion line
51            {goto}@TABLE~{goto}T_PRINT~        Position cell pointer
52            /wtb                               Lock the titles
53            {?}{break}                         Pause while user moves around
54            /wtc                               Clear the titles
55            {return}                           Return
56
57 \PRINT     {}                                 Insertion line
58            /ppca                              Clear current print settings
59            rI_PRINT~ag                        Print input range
60            crrT_PRINT~                        Set table print range
61            brT_BORDER~q                       Set border
62            gpq                                Do it
63            {return}                           Return
64
65 ==================================================================================
```

FIGURE 2: Macros for an amortization worksheet. Menu options (I20..M23) call subroutines for data entry, rebuilding the schedule of payments, browsing, and printing the schedule.

Data Basics

Data Management

Tips and techniques for managing your data

This month: Say it with text.

Steve Cummings

Learn a few text-related skills, and you'll have an easier time finding and presenting information. By manipulating text, you can easily enhance your on-screen displays and printed reports, adding personal salutations and other messages. And when the details you want to extract are stored within larger fields, text functions can help you dig out those nuggets of information.

Let's start with something simple: Using the plus sign, you can combine, or *concatenate,* two or more *text strings* into a single message. A text string is a set of one or more letters, punctuation marks, or numbers. 'John Bartleby', 'Y', '342-B 7th St.', and 'Call me Ishmael' are all strings. To personalize a mailer with messages such as 'It's your lucky day, Herman', include the concatenated expression **"It's your lucky day, " + First_Name** in your form-letter design. As this example suggests, a string can be something you've typed directly between quotation marks ("It's your lucky day,") or the contents of a character or text field (First_Name) or variable.

But concatenating isn't always as simple as it might appear. At first glance, 'First_Name + Last_Name' seems the obvious way to turn two name fields into a complete name. But the First_Name field is usually longer than the actual name inside it, producing results like 'Herman Melville'. In many programs, including *dBASE III Plus* and its clones, the remedy for extra spaces lies in the TRIM() function. An expression like 'TRIM(First_Name) + Last_Name' eliminates all those unnecessary blanks. The trouble is, it also removes the *necessary* one, producing the likes of 'HermanMelville'. To avoid such an eyesore, just add a space to the expression, turning it into **TRIM(First_Name) + " " + Last_Name.** *Paradox* automatically trims fields for you, but you must still insert the extra blank: **First_Name + " " + Last_Name.**

The Right Piece of String

Sometimes you want only a portion of a text string. Let's say your company's part numbers contain several key pieces of information, such as a part type, a factory code, and the item's shelf life. The resulting number might look something like '18392-12-EC-02'. In such cases, rather than adding strings together, you'll want to glean pieces of

dBASE SHORTCUT

In the General Area

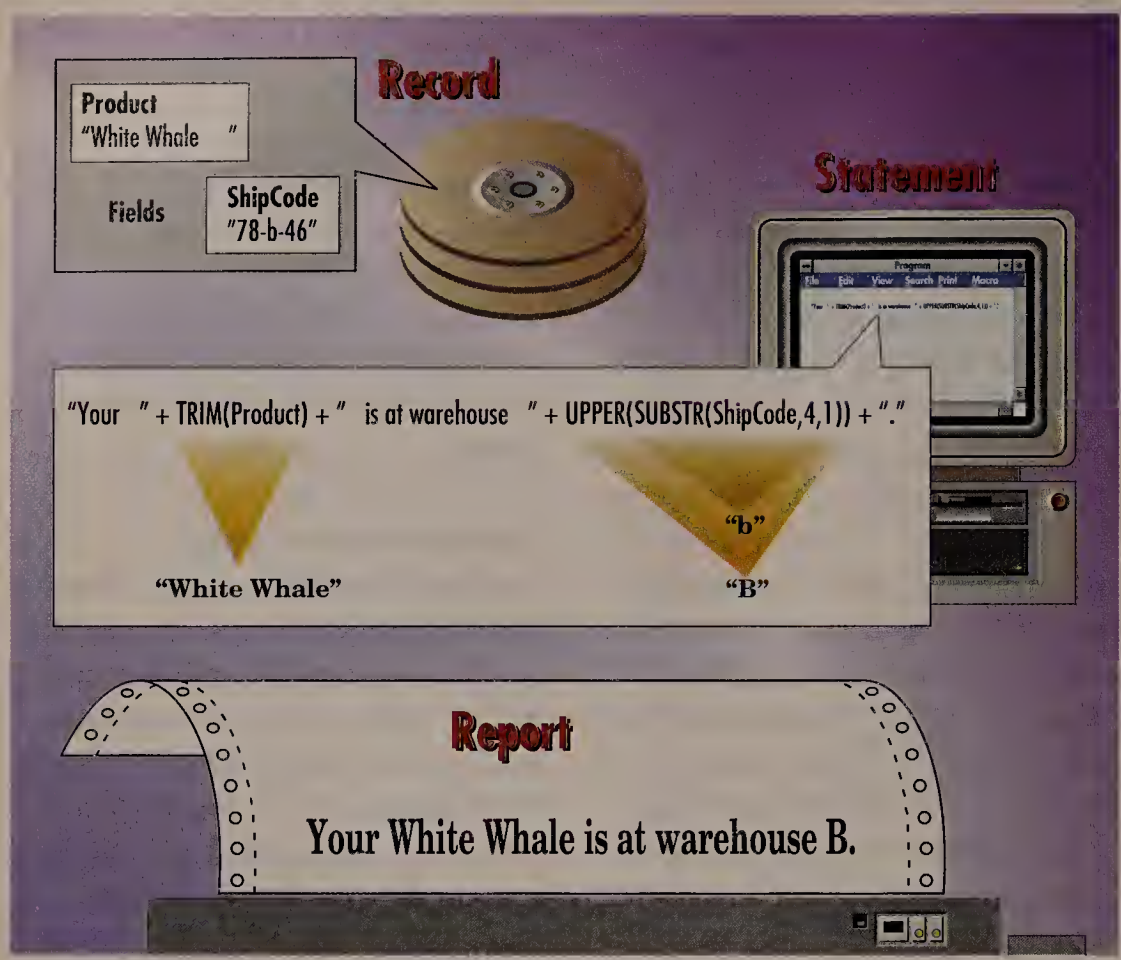
Lincoln Spector

When setting up a report that includes phone numbers, you may want to print only those area codes you'll have to dial—those other than your own. Thanks to various functions available inside the report writer, you can do this in virtually any version of *dBASE* and its clones.

Assuming your Phone field is formatted (999)999-9999, insert the statement **IIF(SUBSTR(Phone,2,3)** *="your area code"*, **RIGHT(Phone, 8), Phone),** rather than the simple field name Phone, in your report design. For instance, if your area code is 415, use **IIF(SUBSTR(Phone,2,3)="415", RIGHT(Phone,8), Phone).**

How does this work? The IIF function tests its first argument, SUBSTR(Phone,2,3)="415", to see if it's true. If Phone's 2nd through 4th characters (the area code) are 415, the argument is true, and IIF() prints the result of the second argument, RIGHT(Phone,8). The RIGHT() function prints the *last* characters in a field, in this case the last 8—the phone number. If the area code isn't 415 and the SUBSTR() argument is false, the result of the third argument—the complete Phone field—is printed. Either way, you get the number you need to dial.

Anatomy of a Sentence



By combining straight text in quotation marks with various data fields and functions, you can mass-produce complete sentences modeled for your customers.

them. A segment of a string is called a substring, and in the dBASE world, the function for unearthing substrings is SUBSTR(). If the 2-digit factory-of-origin code starts with the 7th character in the PartNo field, you can pull it out with the statement **SUBSTR(PartNo,7,2)** (PartNo is the string containing the substring, 7 is the position of the character starting the substring, and 2 is the substring's length). This function is SUBSTR() in *Paradox* and SGET in *R:base.*

To maintain a uniform style for items in your reports, you can use a couple of functions that convert entire strings to uppercase or lowercase letters (numerals and punctuation marks are unaffected). UPPER() and LOWER() do the trick in dBASE and *Paradox;* if the First_Name field contains the name 'Queequeg,' the statement UPPER(First_Name) returns 'QUEEQUEG'. *R:base* calls these functions LUC() and ULC(), respectively.

Most data managers offer more tools for manipulating text than we've discussed here. But these simple tricks will get you started on handling the words inside your data.

Have unmanageable data? Or a tip you'd like to share with other PC World *readers? Next month,* Data Basics *inaugurates a new format, answering questions and offering tips from readers. We'll pay $50 for every tip used. Send your questions and tips to* Data Basics, PC World, *501 Second St. #600, San Francisco, CA 94107-1431; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). We cannot acknowledge submitted materials.*

Steve Cummings is the author of Understanding Quicken *(Sybex, Alameda, California, 1990) and a* PC World *contributing editor. Celeste Robinson is the author of* The Best Book of Paradox *(Howard W. Sams and Co., Carmel, Indiana, 1990). Lincoln Spector is a* PC World *assistant editor.*

PARADOX SHORTCUT

A Case for Conversion

Celeste Robinson

It's easy to set up a *Paradox* field—for instance, a State field using abbreviations—so you can enter only uppercase letters in it. A simple *ValCheck* will do this. But what if you need to convert a field after the fact? What if you've got a table with thousands of lowercase state abbreviations already typed in, and you need them capitalized? Luckily, the SCAN command makes this task easier than it might seem.

First, if you're not already viewing the table in question, press **F10** for the main menu, select *View,* and then the appropriate table. Once the table is on screen, press **<Alt>-<F10>** for the PAL menu, and choose *Miniscript.*

At the Command prompt, type **EDITKEY SCAN [***Fieldname***] = UPPER([***Fieldname***]) ENDSCAN**, where *Fieldname* is the field you want to convert. For instance, to capitalize all the abbreviations in a field called State, use **EDITKEY SCAN [State] = UPPER([State]) ENDSCAN**. Press **<Enter>**, and all lowercase letters in the field, throughout the entire table, will be converted to uppercase. Press **<F2>** to save the converted table to disk.

JEFF BERLIN

The Art of Persuasion

Publishing & Graphics

Expert advice for creating high-impact documents and presentations

This month: Using clip art effectively, and enhancing PowerPoint charts

Richard Jantz

Sometimes the best way to make your point is to draw somebody a picture; unfortunately, few of us have the talent to produce quality artwork or the budget to hire a professional artist. But even if you're slow on the draw, there's still a cheap and easy way to get good-looking images into your presentations: electronic clip art.

Clip art ranges from simple graphic symbols like arrows and banners to complex illustrations of people, places, and objects. While presentation packages like *Harvard*, *Freelance*, and *PowerPoint* come with clip art libraries, they're fairly limited—you may prefer the wider variety of images found in a clip art collection.

Clip art collections typically are organized around themes such as business, travel, or maps and come in one of three formats, which you can usually identify by its file extension. Bit-map files such as PCX and TIFF provide the most realistic pictures, but the images often display jagged edges when enlarged or projected. For simple line drawings, vector files such as CGM and WMF provide sharp output at all sizes and resolutions. Encapsulated PostScript (EPS) files produce the highest-quality art, provided you have a PostScript printer or film recorder.

Clip art can bring your presentation to life or turn it into an eyesore. The key to success is selecting an artistic style that matches your audience, subject, and company identity, then using it consistently. A picture of Homer Simpson holding your company's product might liven up a weekly sales meeting but is unlikely to win you points with the board of directors. And since images are so powerful, you should use them sparingly; save clip art for the one or two key points you want your audience to remember.

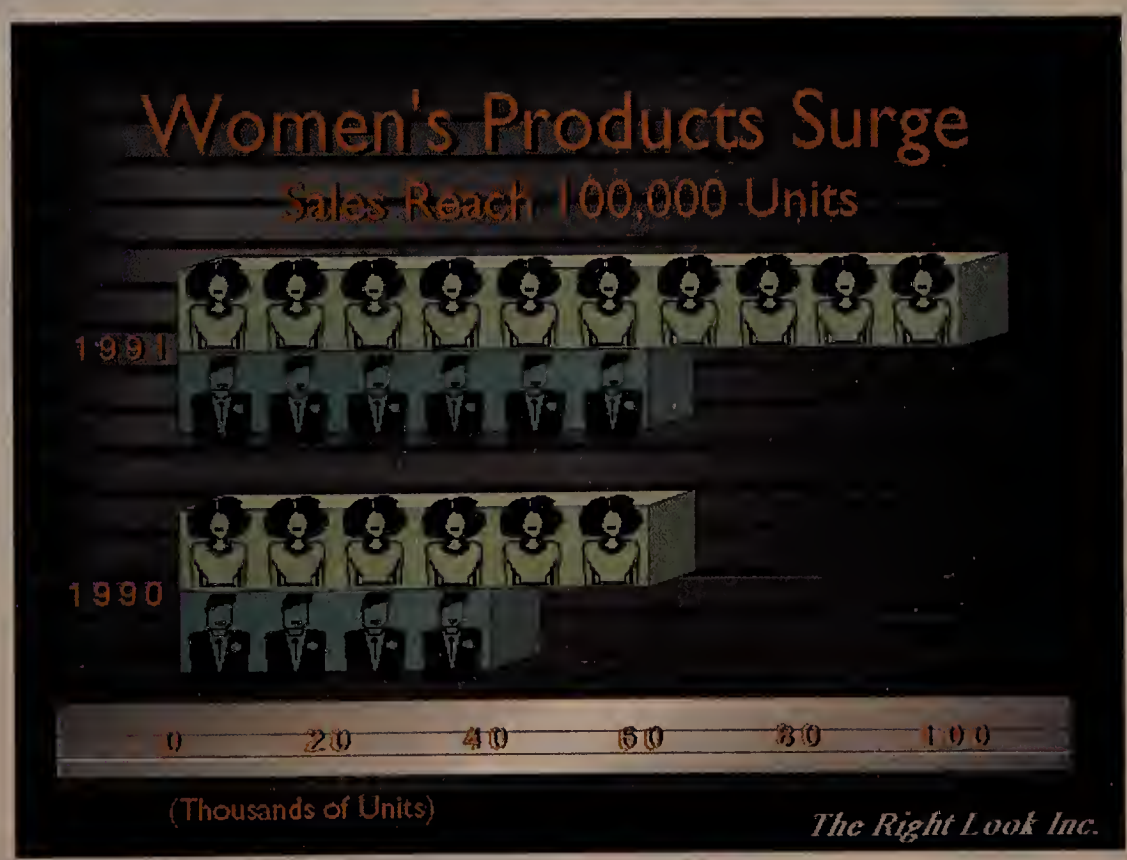
Getting to the Art of the Matter

Here are some guidelines for using images in your slides, overheads, and handouts.

☞The most common graphic in presentations is a company logo. Place it at the top or bottom of every slide, flush left or flush right, large enough to be seen but not obtrusive.

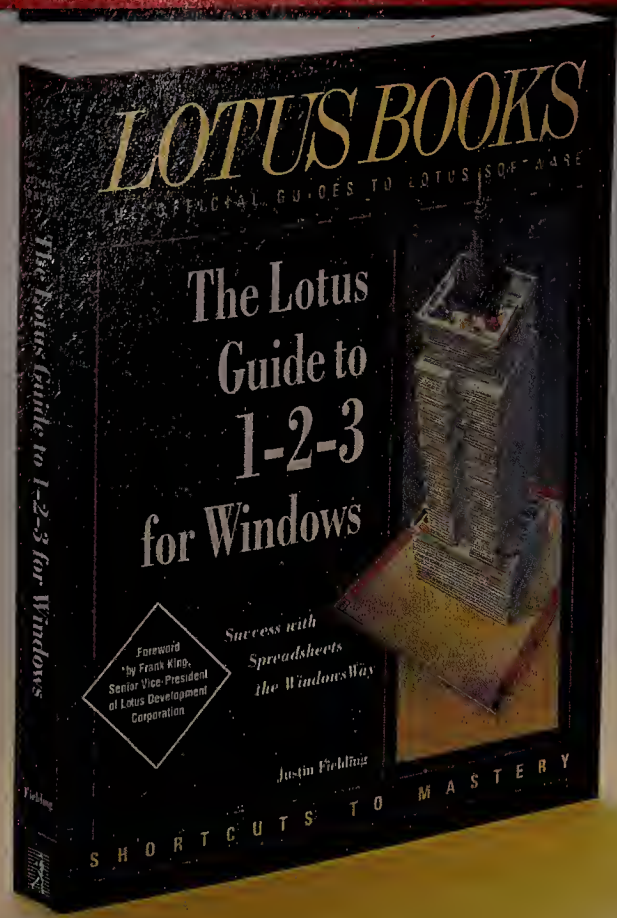
☞As a rule, a single clip-art image works better than several pictures that compete for attention. If you must use multiple images in a slide—say, to show a relationship between objects—make the most important image at least 10 percent bigger.

Helping Your Audience Get the Picture



SCREEN 1: Clip art symbols can turn an ordinary data chart into a memorable one. To create this pictograph, we used Microsoft's PowerPoint to create a horizontal bar chart and pasted symbols of a man and a woman on top of each bar. To help the symbols stand out, we removed the chart's axes, tick marks, and legend.

LOTUS BOOKS presents... the insider's guide to 1-2-3 for Windows



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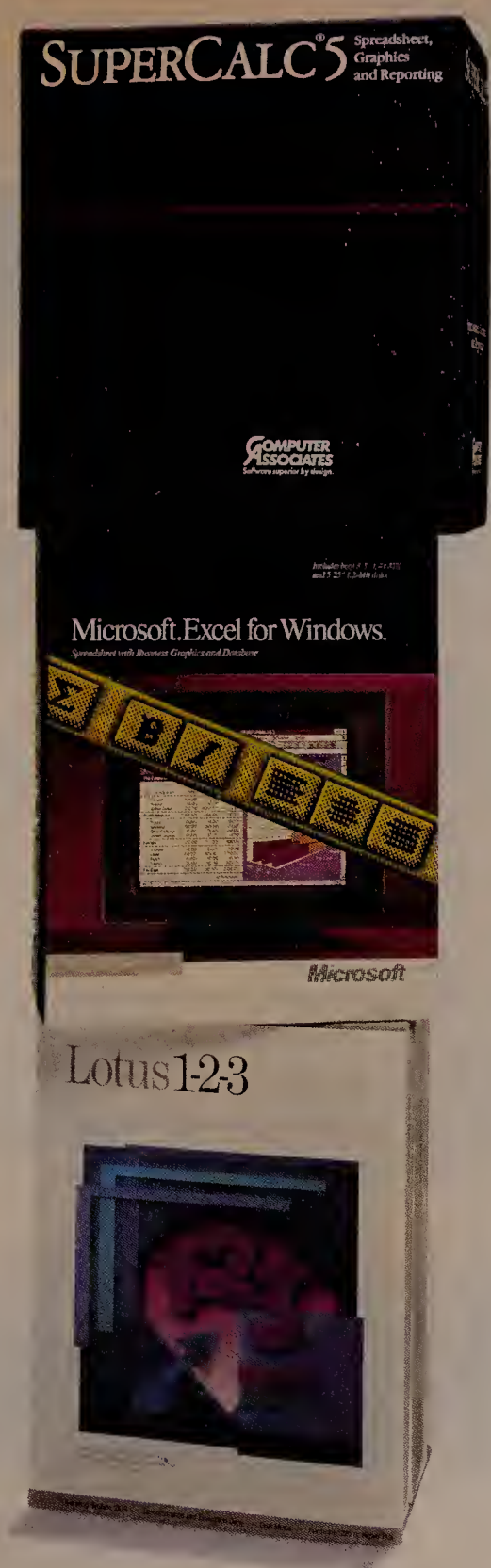

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NUTS & BOLTS

Art for Charts' Sake in PowerPoint

Adding clip art to a *PowerPoint* chart is easy—the hard part is getting it to align properly, especially if you need to align multiple symbols inside a data chart (as in **SCREEN 1**). The trick is to use the program's magnetlike *grid* (a network of horizontal and vertical lines) and *guides* (a movable pair of straightedges) to "snap" each item into place.

First, open a *PowerPoint* clip art file and copy the desired image to the Clipboard, then open your chart and paste in the object. (You also can add an image from another application by using the Edit menu's *Paste from* command.) Resize and crop (edit) the image if necessary, then select the Draw menu's *Snap to grid* option. Although the grid remains invisible, when you move an object it will snap to the nearest horizontal and vertical grid lines.

If you need to fine-tune the alignment, select the Draw menu's *Ignore grid* and *Show guides* options. Then drag the program's snap-to guides to where the top left (or top right) portion of the object should be. When you move the object near either guideline, its edge will automatically snap to the guide.

DESKTOP PRESENTATIONS TOOLBOX

No-Nonsense Clip Art

Want to build a clip art collection but don't know which product to choose? Two good choices for business use are ArtRight Software's *Image Portfolios* and 3G Graphics' *Images with Impact*.

Image Portfolios' high-quality color graphics come in a variety of file formats, including EPS, CGM, and GEM as well as *Corel Draw*'s CDR and *Micrographx Designer*'s DRW. *Images with Impact* is a mixed bag: Some volumes come in color, some black-and-white, and all in EPS, though a conversion utility (bundled with certain volumes) lets you convert images into CGM, PCX, and TIFF.

Choose either product for first-rate images of contemporary people, places, and things you can use to enhance your business presentations.

ArtRight Image Portfolios $149 per volume; ArtRight Software, 1130 Morrison Dr. #330, Ottawa, Ontario, K2H 9N6 Canada; 613/820-1000, 613/820-2651 (fax)
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Images with Impact $99 to $189 per volume; 3G Graphics, Inc. 11410 N.E. 124th St. #6155, Kirkland, WA 98034; 800/456-0234
Reader service no. 662

☞ Use clip art to guide viewers' eyes toward important information. For example, if you use an image of a face that is looking toward the edge of the slide, flip it to face your text or data.

☞ A picture loses impact if your audience has seen it before. That's why you should customize your clip art—change its colors, remove part of it, or combine it with other graphic elements to distinguish it from similar images used in other presentations.

☞ Use a decorative banner or border to make your title slides stand out. Make sure the banner complements your text; as a rule, sans serif text (such as Helvetica) works best with borders made of thick lines, while serif text (such as Times Roman) looks good with thin lines or combinations of thick and thin.

☞ Use simple clip art instead of bullets to make text charts stand out. Arrows, check marks, pushpins, or pointing fingers can help emphasize your key points.

☞ Use more complex clip art as a border or background for your most important data chart. For example, place a line chart showing PC sales figures inside a computer screen, or superimpose an international sales chart over a world map.

☞ Use clip art to create *pictographs*, which use a series of picturelike symbols to convey data. For example, the pictograph in **SCREEN 1** uses a combination of horizontal bars and male and female icons to compare product sales by gender. For a balanced design, try to use horizontal icons for vertical bar charts, and vertical icons for horizontal bar charts.

Finally, remember that many clip art libraries are protected by copyright. Be sure to read the copyright provisions carefully before you use clip art in any presentation.

PC World *contributing editor Richard Jantz is author of* Ventura for Windows 3.0 *(John Wiley & Sons, New York, 1991).*

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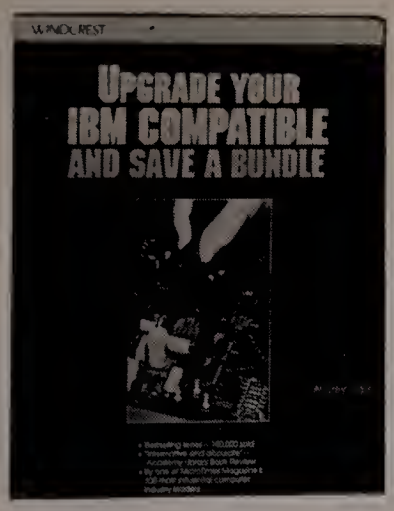

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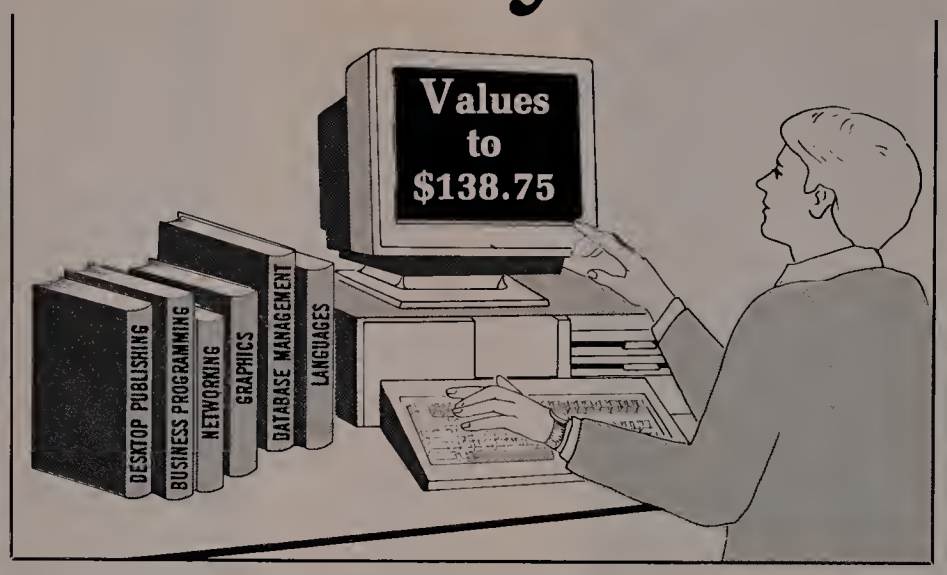

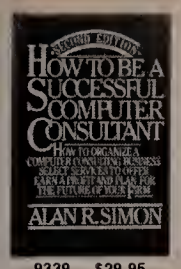

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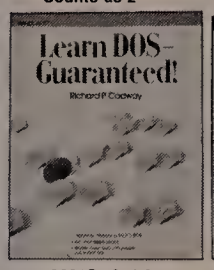

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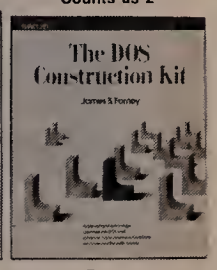

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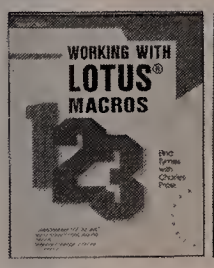

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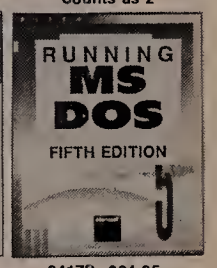

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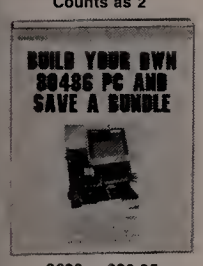

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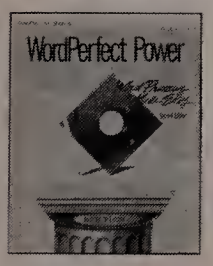

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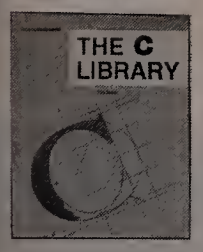

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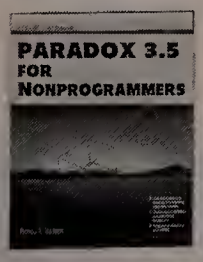

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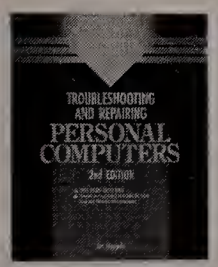

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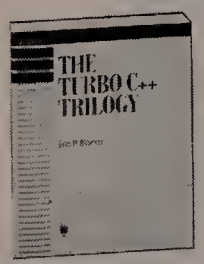

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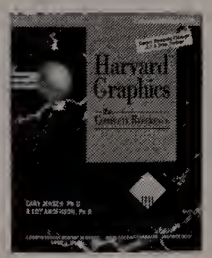

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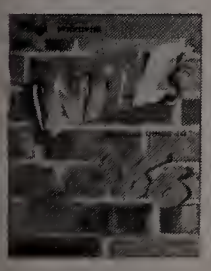

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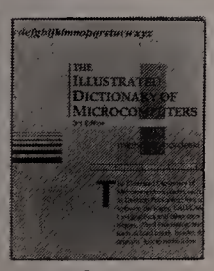

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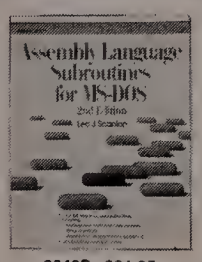

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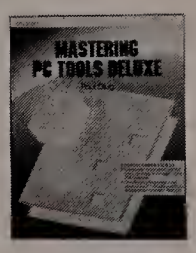

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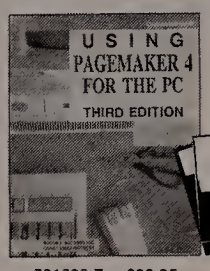

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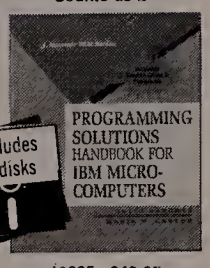

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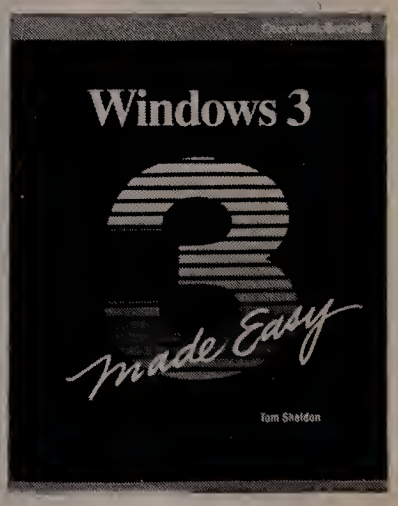

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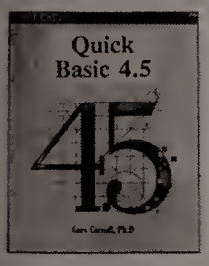

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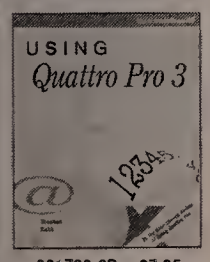

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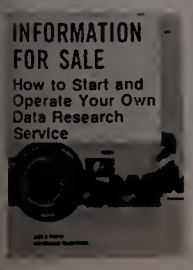

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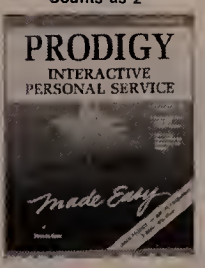

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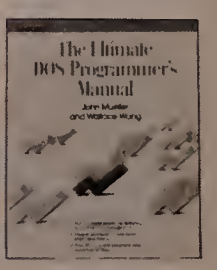

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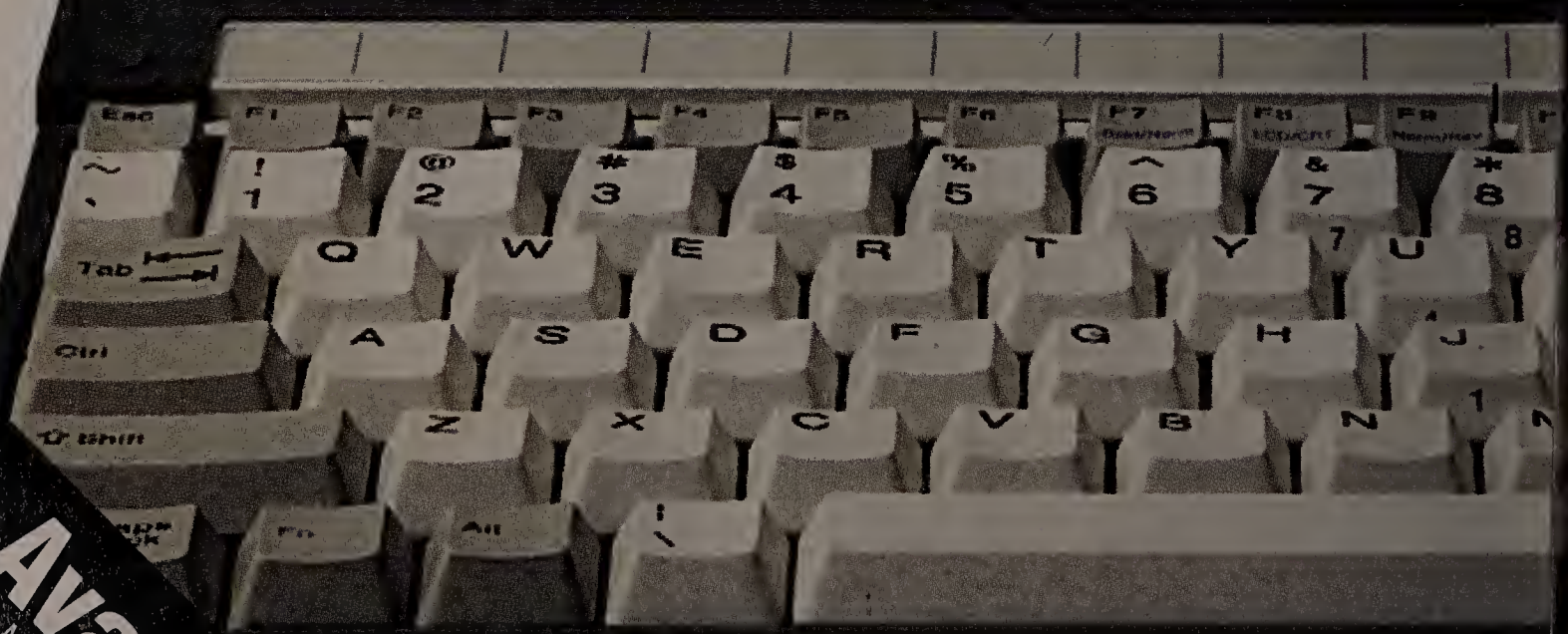

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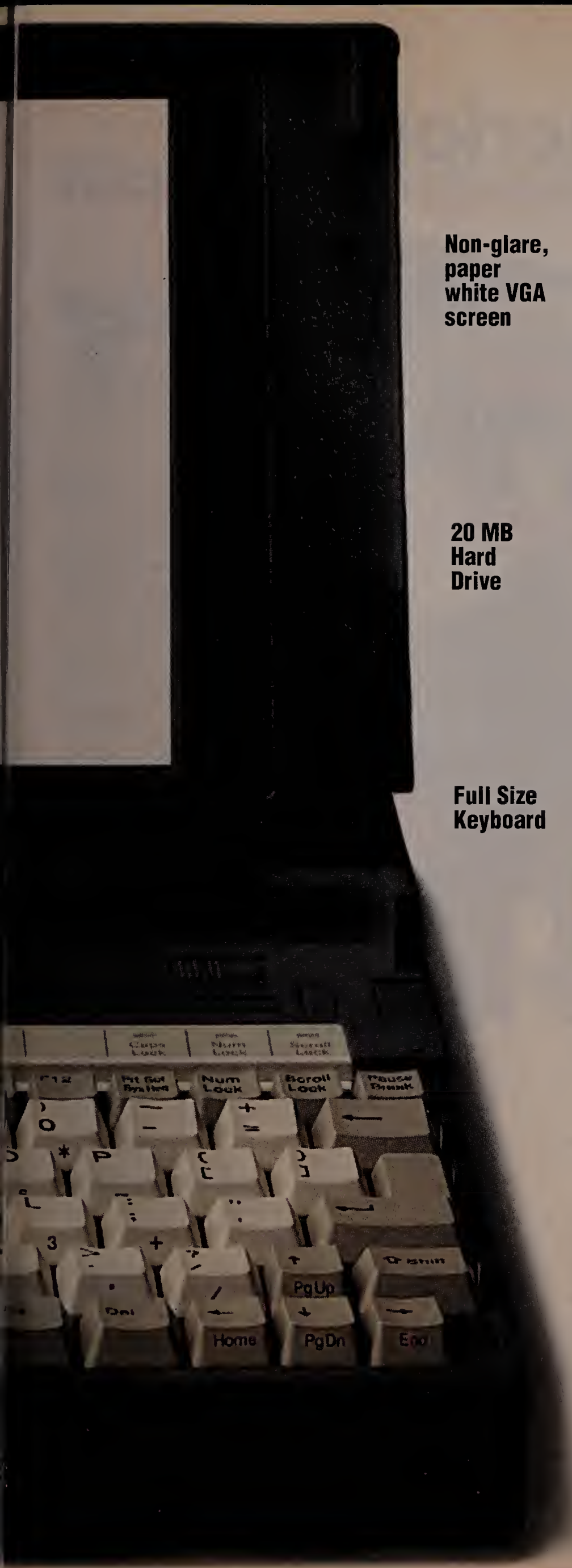

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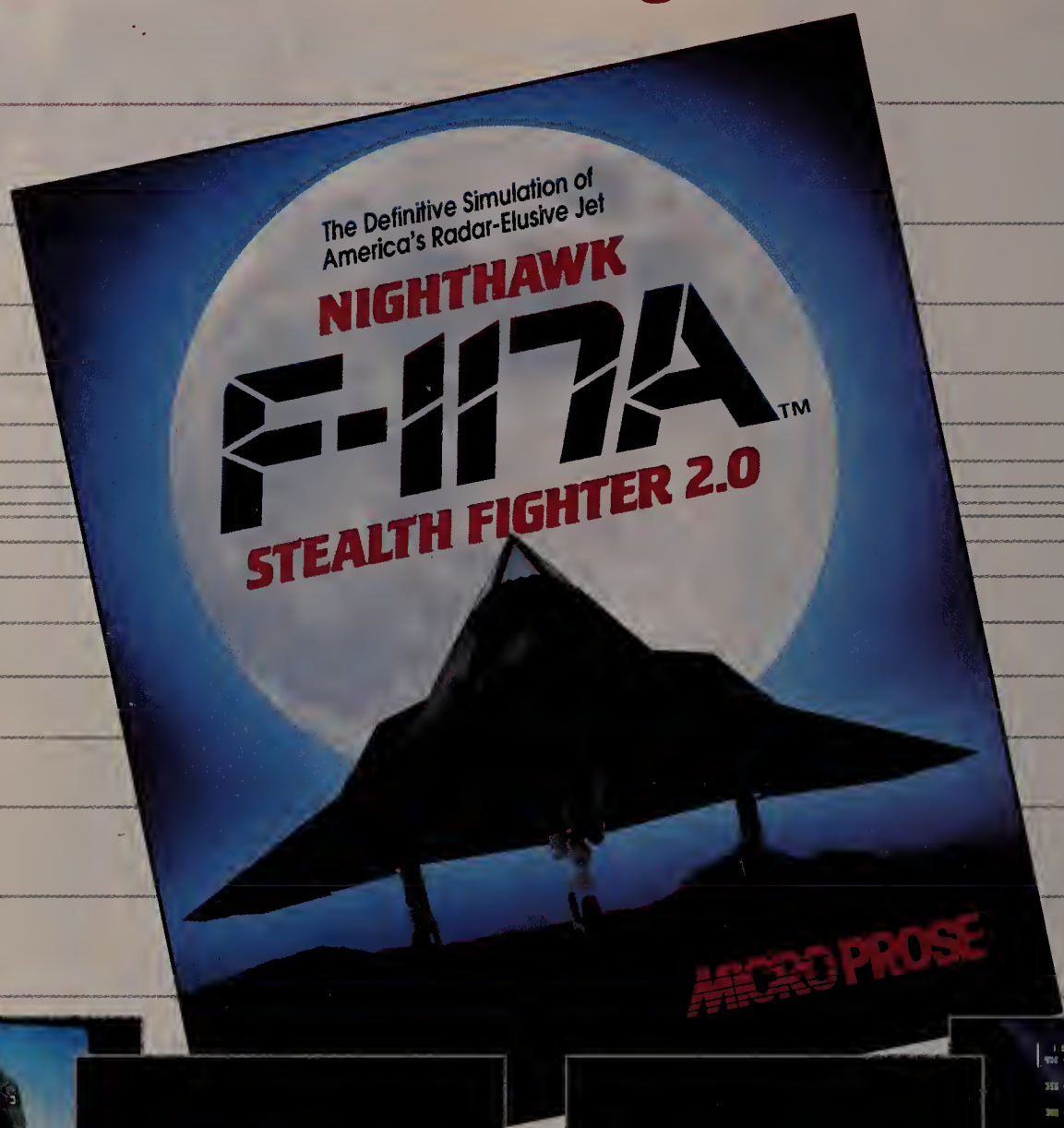

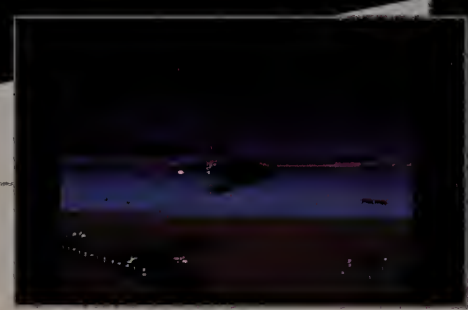

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Windows Workshop

Windows

Practical advice on mastering Windows 3.0

This month: More WIN.INI tune-up tips

Jesse Berst and Scott Dunn

In our last exciting episode, we discussed how to customize *Windows* by editing the WIN.INI file, which resides in the *Windows* subdirectory. In this installment, we'll expand our repertoire and make *Windows* automatically download fonts for PostScript printers, activate changes to WIN.INI immediately, and more.

One-Stop Downloading

If you use a PostScript printer, you probably know that most *Windows* applications will default to using only the printer's built-in fonts. Fonts stored on disk must be manually downloaded to the printer's memory—a pain if your documents use lots of fonts or if you share a printer with co-workers who use different fonts than you do. The solution? Make WIN.INI automatically download the fonts you need.

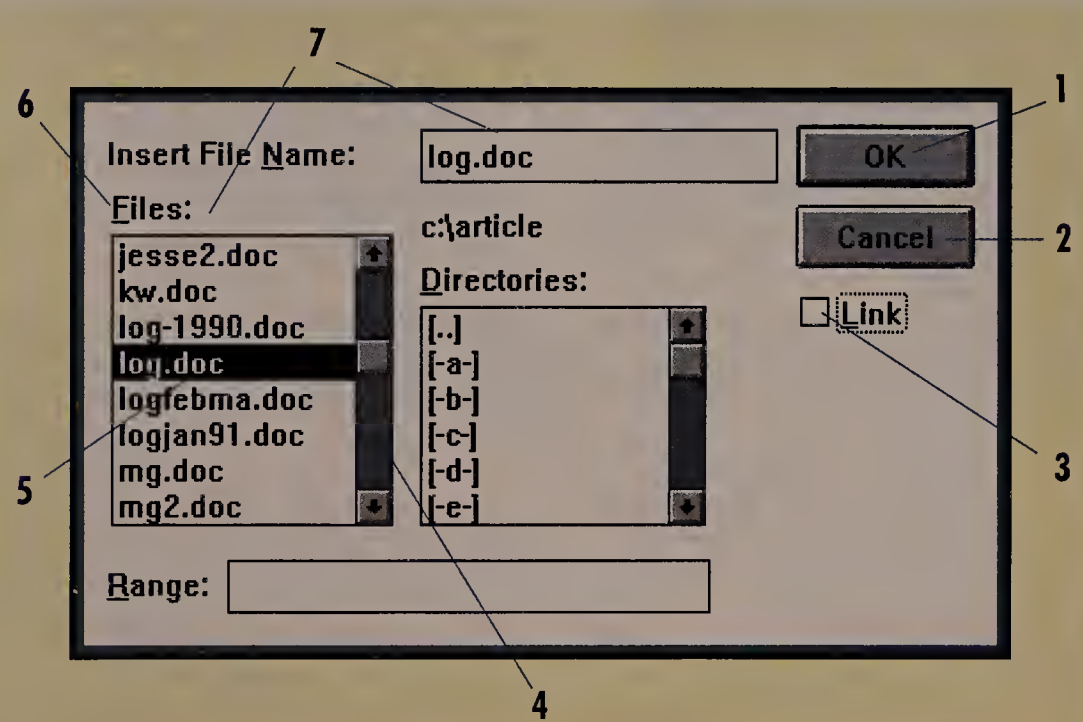
When you install downloadable, or "soft," fonts under *Windows*, WIN.INI references printer font metric (PFM) files, which supply character spacing information. For example, install the soft font Helvetica Black Oblique, and you'll find the line 'softfont1=c:\psfonts\pfm\hvblo___.pfm' under the [PostScript,*port*] heading in WIN.INI.

Note that the line refers only to the PFM file, not to the font itself. To automatically download the font, you'd add a comma (no space) and type in the font's drive, path, and file name on the same line. (Most font files have the same name as the PFM file, but a different extension, such as PFB.) To auto-download Helvetica Black Oblique, the line would be 'softfont1=c:\psfonts\pfm\hvblo___.pfm,c:\psfonts\hvblo___.pfb'.

Type in the information with care, because *Windows* will not debug WIN.INI or alert you if it contains typos. Save WIN.INI, restart *Windows*, and you're set.

The trade-off for this convenience is slower printing: Instead of downloading the fonts for the entire document all at once, WIN.INI will now download the fonts one page at a time, then flush them out. The advantage? If printer RAM is low, you can still print documents that incorporate a lot of fonts. To save time, manually download fonts that get heavy use throughout a document, such as

Timesaver Tips for Dialog Boxes



1. Press <Enter> to "click" the selected button—usually 'OK'.
2. Press <Esc> to cancel action or exit dialog box.
3. Press <Space> to toggle a selected check box on or off.
4. In a list box, press <Page Down> or <Page Up> to jump one boxful.
5. In a list box, press first letter of item to select it; press again to jump to next item.
6. Press <Alt> plus the underlined character to jump to that field or select that button.
7. Press <Tab> or <Shift>-<Tab> to jump from field to field.

Tired of dragging the mouse around to select files and confirm commands? These dialog box keyboard shortcuts can save you time and mouse mileage.

WINDOWS TOOLBOX

A Smarter PostScript Driver

After hashing around a while in WIN.INI, you may find yourself dreaming of greener pastures. Wouldn't it be great if you could switch between automatic and manual font downloading at the click of a button? Or download fonts from inside an application? Or even adjust the angle and frequency of screen tints and halftones without messing around with PostScript commands?

You can, thanks to the $199.99 *Micrografx PostScript Driver* v. 2.6. If you already have *Designer 3.1* (or earlier *Windows 3.0* programs from Micrografx), you can use the MGXPS.DRV file.

Either way, just copy the driver to \WINDOWS\SYSTEM subdirectory and use it instead of your current PostScript driver. Select it from within an application, and you'll find copious controls: the ability to install, display, and manually or automatically download fonts; to dictate pattern and curve quality; to access more PostScript printers than any other driver; and more.

In particular, this latest version lets you adjust the screen frequency and angle of gray tints and halftone screens. That means sharper, more distinct grays on both laser printers and imagesetters. Another bonus: Micrografx claims the new driver is faster at printing text and bit maps and downloads fonts faster. Note: *Ventura for Windows* can't print EPS files with the driver, a problem Xerox may solve in the future.

Micrografx PostScript Driver v. 2.6 $199.99; Micrografx, Inc., 1303 Arapaho, Richardson, TX 75081, 800/733-3729, 214/234-1769
Reader service no. 601

your body copy font, and auto-download the rest.

Quicker Print Files

Sometimes the easiest way to convert data to ASCII format or move it over a LAN is to create a "print file." Doing this in *Windows* is a snap—open the Control Panel, double-click the Printers icon, select a printer, click *Configure*, select FILE as the "port" *Windows* prints to, and confirm your choice. In your application, select the printer you've just attached to FILE, supply a file name (such as PRINTME.PRN), and the data is printed to disk.

If you don't need copies of individual print files, you can have WIN.INI supply the print file name automatically. Locate the [ports] section in WIN.INI; add a line in the format *filename*-.PRN=, like PRINTME.PRN=. Save WIN.INI and restart *Windows*.

Now go back to the Control Panel. First select a printer and then pick PRINTME.PRN in the Ports list box, confirm the choice, and return to your application. Now every time you print to this new "port," you won't have to supply a file name; and *Windows* will overwrite the print file with the new data each time you use this option.

Instant WIN.INI Changes

Most manual modifications to WIN.INI don't take effect until you exit and reload *Windows*. But if you open the Control Panel, double-click any icon, and then click *OK* (not *Cancel*), changes made in the [ports], [extensions], and printer-specific sections of WIN.INI (such as [PostScript.LPT1]) become active instantly.

If you don't feel like dragging over to the Control Panel, don't sweat it. Some programs, like *Corel Draw*, let you access the Control Panel directly. Generally, the trick also works if you select the Printer Setup, Target Printer, or Print option in an application, and click *OK*. In some cases, you may also have to close and reopen the current file—but it still beats restarting *Windows*.

Need help with Windows 3.0? *Looking for that perfect utility? Reach out—send your questions to* Windows Workshop, PC World, *501 Second St. #600, San Francisco, CA 94107-1431; CompuServe 74055,412; or MCI Mail PC World Editorial; 415/442-1891 (fax).*

Jesse Berst is a contributing editor for PC World. *He and Scott Dunn are coauthors of* 101 Windows Tips *(Peachpit Press, Berkeley, California, 1991).*

POWER TIP NO. 209

Precise Mouseless Moves With Publish It

Publish It is one desktop publishing package that doesn't require a mouse. You can move the pointer, although not precisely, by pressing the cursor keys alone. But if you hold down the <Shift> key at the same time, you can move the pointer pixel by pixel and achieve mouselike precision.

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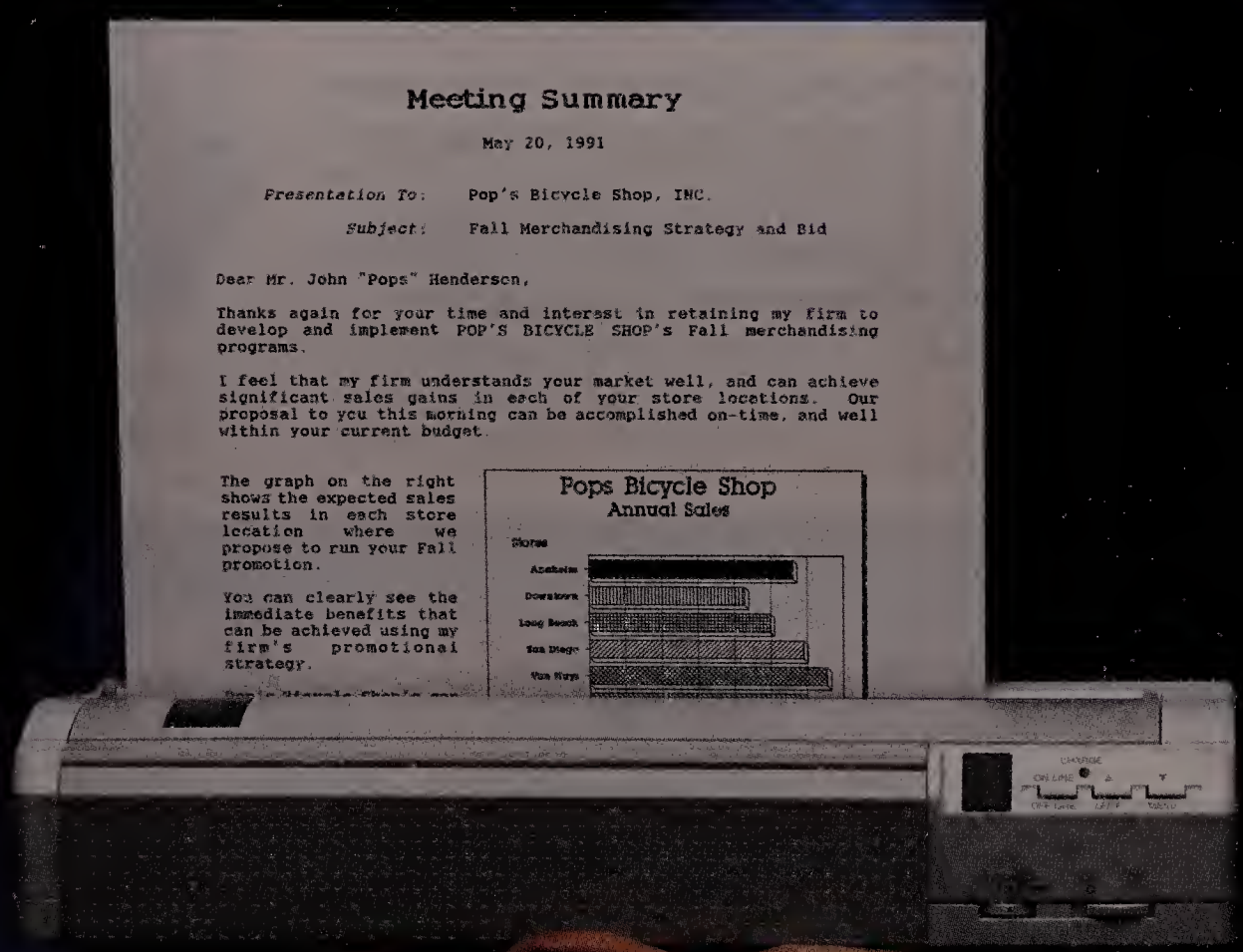

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The Information Edge

Communications

On-line resources for business and professional users

This month: Find out how Delphi stacks up against CompuServe and GEnie, and tap into the world's biggest medical data base with PaperChase.

Judy Heim

Most of the big on-line services have Fortune 500 backers. CompuServe Information Service (CIS), for instance, is backed by H & R Block, and GEnie has General Electric. Delphi has no deep-pockets patron, just a small staff and a persevering spirit. Sure, Delphi is a bit underpowered compared with the big guns—there are only 27 forums—but low prices and slick menus make it worthwhile for business users in search of low-cost on-line information, especially travel info. For a free demo, dial 800/365-4636, type **JOINDELPHI** at the prompt, and use the password **PCSPECIAL**.

Q. *I've heard Delphi is a lot easier to use than either CIS or GEnie. Is this true?*

A. Absolutely. Its straightforward menus are perfect even for novices, and the service is laid out logically. You can't get lost.

Q. *How do Delphi's prices compare with CIS's and GEnie's?*

A. Delphi is a bargain—especially during prime business hours. The first 20 hours every month cost only $1 each, day or night. After that, it's $1.20 an hour. (If you use Tymnet, add $9 an hour during the day; evening access is free.) In comparison, CIS runs $12.80 an hour day or night plus $2 per month. Daytime access to GEnie costs $18 an hour plus $4.95 a month; at night some services are available with no hourly fee.

Q. *My business already takes up more time than I have. Why should I squeeze in Delphi?*

A. With Delphi you get access to two essential business sources: the UPI news wire and USA Today News Briefs—and you get both news services without surcharges. In addition, you can use two encyclopedias—Grolier's, and Delphi's own Kussmaul. Grolier's costs a nominal $1 surcharge per session; access to Kussmaul is free.

Also, Delphi offers more services for business travelers than CIS and GEnie do. For example, Bargain Finders International lets you search for current airline bargains. And, you can work with numerous on-line travel agencies to rent cars and limousines and reserve plane seats, hotel rooms, restaurant tables, even theater tickets. Enter the name of a city or country in MetroLine or WorldLine, and get the lowdown on local customs and happenings. Or check State Department Travel Advisories for the latest scoop on danger spots abroad.

Delphi offers the familiar Online Airline Guide too, but the bargain stops there. OAG costs $46.40 an hour during the day (including Delphi's $1 hourly charge). CompuServe offers the same service for a lot less during the day, and GEnie is cheapest at night.

Q. *I'm an investor. Is there anything for me on Delphi?*

A. Stock quotes are available, with a 15-minute delay, for only 7 cents each. Commodity quotes cost 5 cents each. That's a good deal for daytime stock watchers, or those who need only a few quotes, but investors with sizable port-

ON-LINE SHORTCUT

When Not to Use ZMODEM

ZMODEM is the fastest error-checking protocol around when conditions are normal, but excessive line noise can make it slower than good ketchup. If a noisy line starts polluting a file transfer, ZMODEM's speed may drop from hundreds of characters per second to a 50-cps creep. If that happens, abort the transfer and start it again with YMODEM, which does a better job at handling extremely noisy lines.

THE PROFESSIONAL EDGE

PaperChase Tames the Medical On-Line Lion

Ron Chusid

Medline, the world's foremost medical data base, is an indispensable tool for doctors and many others in the health care field. It holds abstracts and references for more than 6 million articles published in the United States and abroad. Unfortunately, navigating Medline can be as tortuous as learning Latin.

Happily, there's a better way. Doctors at Boston's Beth Israel Hospital have developed PaperChase, an innovative, menu-driven service to help physicians tap Medline without first earning a librarian's degree. PaperChase also provides access to an additional 540,000 articles in the National Library of Medicine's Health Planning and Administration data base.

Best of all, PaperChase is relatively cheap. Accessed directly through Beth Israel Hospital, it costs only $23 an hour ($22 at night), plus 10 cents per reference. It's also available on CompuServe and several other services at $44/hour and up, but without reference charges. Accessing Medline directly, without PaperChase, gets you tangled in a complicated pricing structure as well as a brutal user interface, but it seems to cost about half what PaperChase does.

Suppose you want to use PaperChase to search for information on President Bush's illness earlier this year. Begin by typing **atrial fibrillation** at the 'Look For' prompt, and specify where to look: article titles, subheadings, or author's name. Unfortunately, there's no way to search full text. PaperChase then lists titles for all matches it finds. For 'atrial fibrillation' it locates about 5000 references.

To narrow that list, type **hyperthyroidism**—the cause of Bush's atrial fibrillation—and run a new search that combines the two terms. This produces a list of 145 references, and you can prune this list further by focusing on particular journals or certain years. All the while, PaperChase offers related subject headings and suggests ways to limit the search. On-line help is always available.

Once the search is complete, PaperChase displays a list of article references, about half of which are linked to abstracts. You can read the abstract on screen or have PaperChase send you the full text by mail ($9) or fax ($20). PaperChase offers many conveniences, including storing customized search criteria and resuming downloads where you left off if line noise interferes.

Medline is fine, but PaperChase is quicker. Its ease of operation and cost-efficient price make it one of the best deals going in the health care world.

PaperChase 350 Longwood Ave., Boston, MA 02115; 800/722-2075, 617/278-3900, 617/277-9792 (fax)
Reader service no. 603

folios may do better on GEnie, which offers unlimited quotes at night for the standard $4.95 monthly fee.

But Delphi's investment features don't stop there. For an additional $1.25 per session, you can access daily market reports on everything from treasury bonds to livestock. Data on money market funds and CD rates can be downloaded with only minimal surcharges: $1.25 per session and $1 per report, respectively. A registry of public corporations is also available on line with no surcharge.

Q. *I'm interested mainly in downloading files. Does Delphi make sense for me?*

A. Although it's cheaper and much easier to download software from Delphi than it is from CIS or GEnie, Delphi's file collection is a lot smaller. The bigger services offer upward of 60,000 files each, while Delphi's library comprises a mere 10,000 titles. And new uploads are likely to appear first on either CIS or GEnie.

Q. *Does Delphi offer electronic mail?*

A. Yes indeed, and the interface is a lot easier to use than on CIS or GEnie. As with those services, you can attach binary files to your messages using all the major protocols like ZMODEM and YMODEM. And you can send telex and fax messages, although fax costs considerably more than the equivalent on CIS or GEnie.

Judy Heim is a contributing editor for PC World. *Ron Chusid is chair of the Department of Medicine at Muskegon General Hospital in Muskegon Heights, Michigan.*

WHERE TO BUY

Delphi
General Videotex Corp.
3 Blackstone St.
Cambridge, MA 02139
800/695-4005, 617/491-3393
Reader service no. 602

User Group Tips

Helpful hints from members of the nation's user groups

Run Multiple Ami Pro Macros

Ami Pro can run a macro automatically when you start the program. But if you need to run two or more every time, it's a pain to have to select them manually. Fortunately, one macro can *call* as many macros as you want. Just open a new file, and enter **FUNCTION autoexec()** on the first line. On the next line, type the macro programming statement **CALL** followed by a space, then the drive, path, and file name of the first macro you want run automatically, then **!**, and finally the name of that macro's function followed by **()**; for example, CALL c:\amipro-\macros\envelope.smm!env1(). Press **<Enter>**, and continue adding CALL statements (each on a separate line) for the other macros you want *Ami Pro* to run automatically at start-up. Finally, type **END function** on its own line, and save the file as AUTOEXEC.SMM in the macro directory \AMIPRO\MACROS. *Ami Pro* recognizes the SMM extension and checks the syntax on its programming instructions, but you'll have to make sure you spell your macro and function names accurately.

Rodger Schuester
East Bay Chapter CPA Computer Users Group
Walnut Creek, California

Corel Draw Expands Your Selection of PostScript Fonts

Corel Draw is great for creating splashy headlines, which you can export for use in *Ventura Publisher* and other PostScript-capable applications. But don't limit yourself to the selection of fonts resident on your printer—you can use any typeface in *Corel Draw*'s font library. When you export, just deselect 'All fonts resident' in the Export dialog box. Then *Corel Draw* automatically exports the headline as a graphic, retaining the letters as individual shapes with all the special effects, gray scales, or colors you've added. You'll be able to print on any PostScript printer without worrying about matching resident fonts.

Mike Buxbaum
Long Island Computer Association

Saving Wisely With PageMaker

PageMaker has three ways to save—two of them are optional, one is automatic. The most familiar are Save and Save As, the saving choices you make before or after significant changes. But every time you copy, print, use the clipboard, click on a page icon, insert or delete a page of your document, or change your page setup, *PageMaker* automatically makes a quick, transparent minisave of your publication. This feature stores a more up-to-date version than your last manual save. And you have a fail-safe if the power goes out, even if you've never saved the file or named it. Your last minisave will be a file with a TMP extension. Under ordinary working circumstances, you can undo to the last minisave by holding down **<Shift>** as you select *Revert* from the File menu. Or you can go a step further and bring back your last full save by just selecting *Revert*. You can return to the full save after going to the minisave but not vice versa.

Because both the minisave and the Save add changes to the original file, they execute faster than Save As, which does a total rewrite of the file. If you don't mind slower working saves, *PageMaker 4.0* lets you select Save As for default setting. But avoid leaving oversized files on your disk. Save your publication as itself at the end of each work session.

Howard Wexler
Westchester PC Users Group

Making Time With an Older Version of DOS

You have always felt comfortable with your DOS 3.2 or earlier and never felt a need to upgrade. So what if it's showing signs of age? You stopped counting gray hairs a long time ago. But now you decide to impress your boss by having the data base generate invoices with automatic time stamps. Uh-oh! Your system clock is set to standard time, and it's daylight saving time. Good thing you caught it, but it's no big deal—you go to the DOS prompt, type **time**, press **<Enter>**, and then enter the correct time. For a while, everything works fine—your system time-stamps every invoice perfectly. But when you turn your computer on the next day, there's that same incorrect time! The TIME and DATE functions in DOS versions 3.2 and earlier are capable of only temporary changes to the battery-backed CMOS clock your system reads when turned on. You can run your system's setup program to reset the CMOS clock as well as the system clock, or upgrade your DOS—the TIME and DATE commands in versions 3.3 and later reset both clocks.

Dan Rocha
San Francisco PC Users Group

Are you a user group member with a tip to share? Send it to User Group Tips, PC World, *501 Second St. #600, San Francisco, CA 94107; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax)—include your phone number and the name of your group. We pay $50 and throw in a* PC World *T-shirt for each tip we use—and you get to see your name in* PC World. ●

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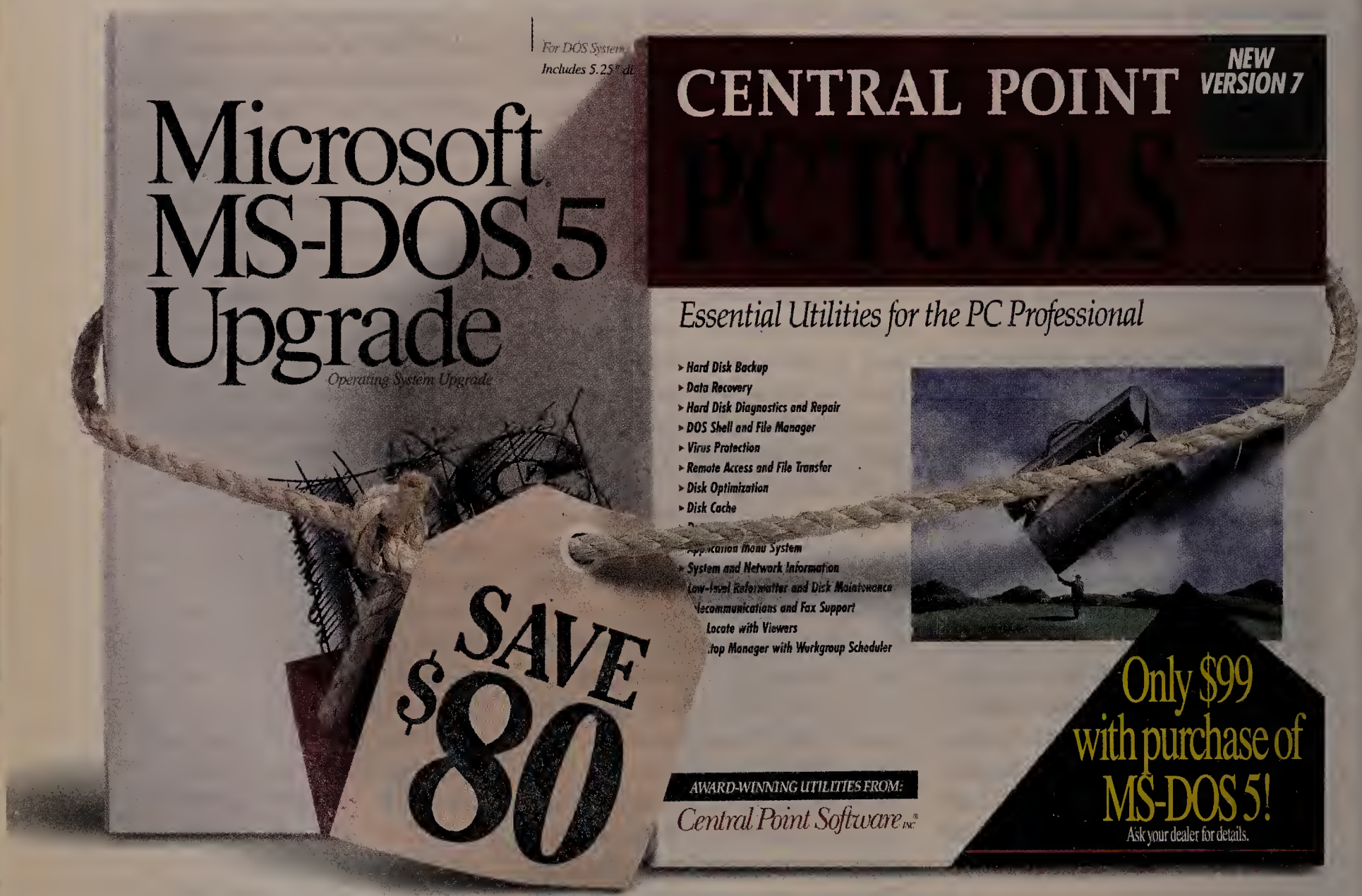

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Circle 52 on reader service card

STAR-DOT-STAR *.*

A global exchange of personal computer discoveries

Kill the dreaded Midnight Bug, automate LAN security, master the art of boxing with WordPerfect, learn when you don't need *.*, and program for Windows, visually.

Edited by Brett Glass

Squashing the Midnight Bug

The IBM PC has suffered for years from the "midnight bug," which can cause the machine's calendar to fall behind if it's left on and not used for more than 24 hours. To get around this problem, I wrote a RAM-resident program that maintains the correct date.

To assemble the program, type the hex code in **LISTING 1** into an ASCII text file named FIXDATE.DAT. Double-check your typed code—it's easy to make mistakes when typing hex. To create the program file FIXDATE.COM, make sure you're in the same directory as FIXDATE.DAT, and that DEBUG.COM is on your path. Then enter the command **debug < fixdate.dat** at the DOS prompt.

Once FIXDATE.COM is created, put it in your AUTOEXEC.BAT file to keep your PC's calendar up to date.

Irwin Cohen
New York

Editor's note: This program solves a problem that has plagued users since the original IBM PC was released. The PC's BIOS sets a yes/no flag—called the "midnight flag"—each time midnight passes. When DOS calls the BIOS to check the time, it receives notice that the midnight flag was raised and updates its calendar. The BIOS automatically clears the flag after the request.

The problem occurs if the computer has been completely idle while two or more midnights have passed. The next time the computer is used, DOS checks the flag, but only receives notice that the flag was raised; it has no idea that it was raised more than once. Hence, it advances the calendar by only one day, and is then a day or more behind.

A different series of events can cause DOS to miss advancing its calendar. If another program calls the BIOS for the time before DOS does, the flag will be lowered and DOS will never notice that midnight has passed.

FIXDATE.COM solves this problem by lurking in the background, waiting for midnight to pass. At midnight, the program instantly calls DOS to check

(continues)

```
N FIXDATE.COM
E100 E9 C1 01
F103 214 0
E215 50 1E 52 51 2E A1 0F 01 3D 00 00
E220 75 49 2E C7 06 0F 01 01 00 B8 40 00 8E D8 80 3E
E230 70 00 00 74 2F 57 06 2E C4 3E 0B 01 26 80 3D 00
E240 07 5F 75 20 2E 8C 16 11 01 2E 89 26 13 01 8C C8
E250 8E D0 8D 26 15 02 B4 2A CD 21 2E 8E 16 11 01 2E
E260 8B 26 13 01 2E C7 06 0F 01 00 00 59 5A 1F 58 2E
E270 FF 2E 03 01 50 1E 52 51 2E A1 0F 01 3D 00 00 75
E280 3A 2E C7 06 0F 01 01 00 B8 40 00 8E D8 80 3E 70
E290 00 00 74 20 2E 8C 16 11 01 2E 89 26 13 01 8C C8
E2A0 8E D0 8D 26 15 02 B4 2A CD 21 2E 8E 16 11 01 2E
E2B0 8B 26 13 01 2E C7 06 0F 01 00 00 59 5A 1F 58 2E
E2C0 FF 2E 07 01 0E 1F 8D 16 14 03 B4 09 CD 21 B4 34
E2D0 CD 21 2E 89 1E 0B 01 2E 8C 06 0D 01 B8 1C 35 CD
E2E0 21 2E 89 1E 03 01 2E 8C 06 05 01 BA 15 02 0E 1F
E2F0 B8 1C 25 CD 21 B8 28 35 CD 21 2E 89 1E 07 01 2E
E300 8C 06 09 01 BA 74 02 0E 1F B8 28 25 CD 21 8D 16
E310 C4 02 CD 27 46 69 78 64 61 74 65 20 34 2E 31 2C
E320 20 28 43 29 20 31 39 39 31 20 49 2E 20 43 6F 68
E330 65 6E 0A 0D 24
RCX
235
W
Q
```

LISTING 1: Run FIXDATE.DAT through debug to create FIXDATE.COM, a program that keeps your IBM PC's calendar from falling behind.

ANTHONY RUSSO

PC WORLD

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PC WORLD

the time. To make sure no other program has an opportunity to sneak in, it's a good idea to make FIXDATE.COM the last *TSR you load in your AUTOEXEC file.*

NetWare Security Audit

As a LAN administrator, I need to make sure my Novell NetWare network remains secure. To do so, I run AUDITLAN.BAT (see **LISTING 2**) every weekend to perform these security checks:

- Check for short or easy-to-guess passwords by running the Novell SECURITY program
- List EXE or COM files that have appeared in public directories in the last week, so I can keep an eye on new, unauthorized programs that may be viruses or Trojan horses
- Run the CHKDIR program on all directories with space restrictions, to make sure no one is running out of room
- Check the integrity of the hard disk volume with the CHKVOL utility
- Send a complete report to the network printer

To use AUDITLAN.BAT, call the batch file from the DOS prompt using the current date (e.g. 9-1-91) as a parameter. You must have supervisor privileges on the LAN for this batch file to run properly.

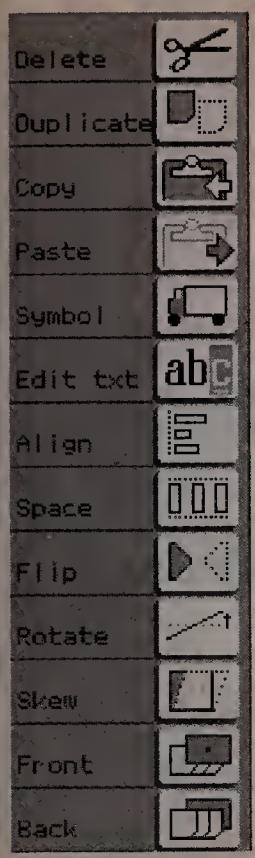
Rick R. Monnin
Arlington Heights, Illinois

Editor's note: Every LAN administrator should run a batch file like this one at least once a week, although you will

(continues)

```
@echo off
map i:=sys:
capture q=laser1
cls
echo working, please wait....
i:
cd \system
echo system security check report > prn
systime > prn
security > prn
cd ..
endcap
systime > prn
capture q=laser1
echo search for new .exe and .com files on sys: > prn
systime > prn
ndir all *.exe create aft %1 > prn
ndir all *.com create aft %1 > prn
endcap
capture q=laser1
systime > prn
echo sys: restricted directory size report > prn
i:
cd \dept91
chkdir > prn
cd \dept94
chkdir > prn
rem ** repeat for other directories of interest
cd \
endcap
capture q=laser1
systime > prn
chkvol * > prn
endcap
```

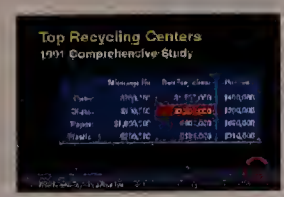
LISTING 2: Use this batch file to audit your NetWare LAN, passing it a date as a parameter. EXE and COM files created after that date will be flagged for examination.

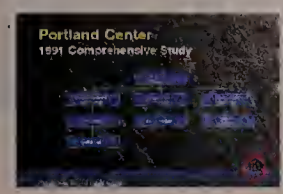


Drawing tools. 39 in all.

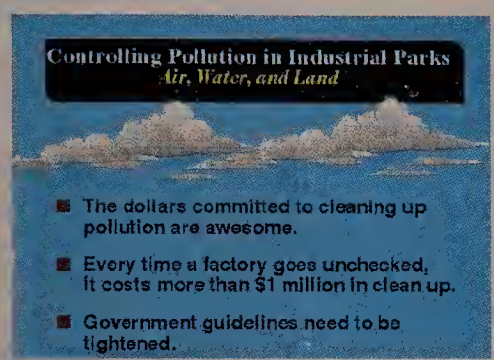
Do what you've always done before…

Twist it. Turn it.

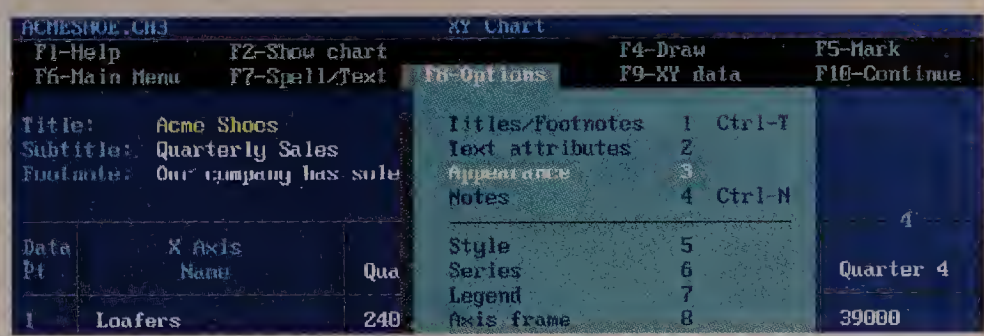




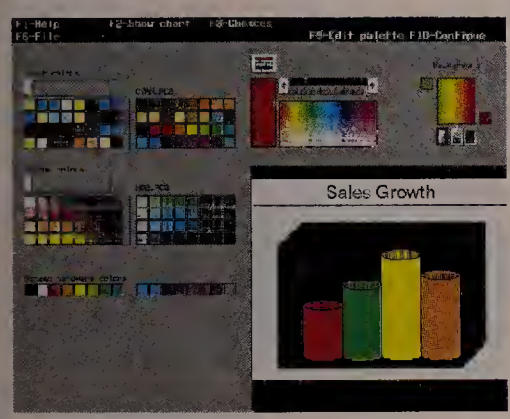
From titles to footnotes. From colors to logos. Our global options keep it consistent.



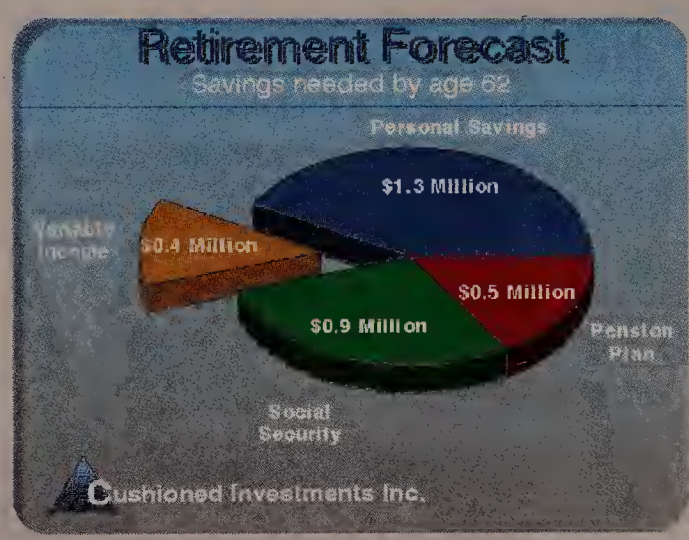
…style it like you've never seen before.



We heard you. Now you can view and select directly from your spreadsheet.

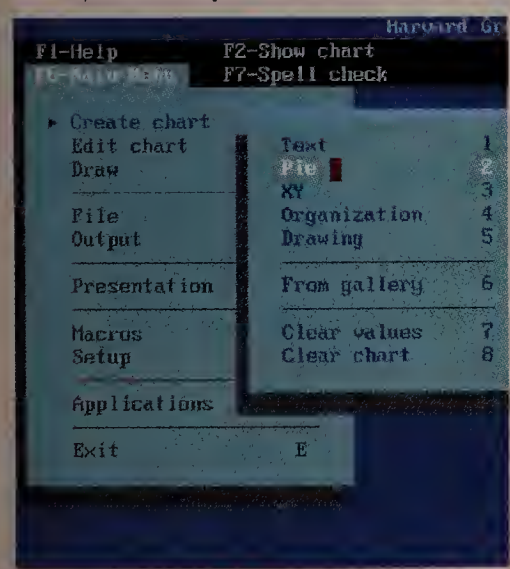


Choose from 32 color palettes. Then shade. Mix. Blend.

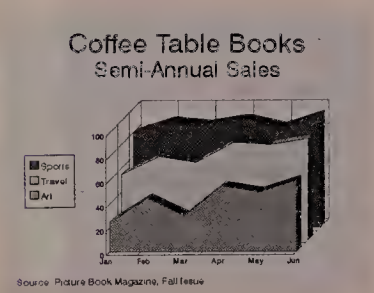


You enter the data, we'll make it look good. It's what you've known us for all along.

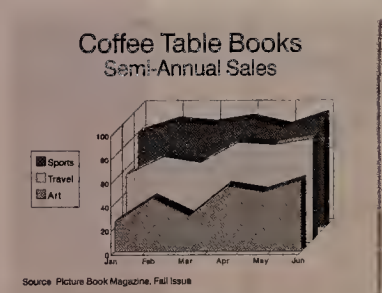
How do 16 million colors sound?



Look familiar? It should. It's Harvard Graphics.



What you see is what you get.



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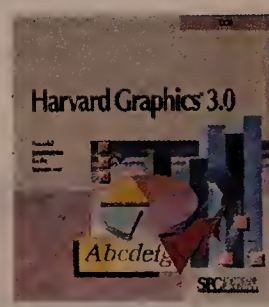

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want to change directory and print queue names to match your system. If your version of NetWare doesn't come with the SECURITY.EXE program, remove line 10 from the batch file.

Scanning for COM and EXE files with dates more recent than last week may not be sufficient to flush out viruses or Trojan horse programs; a "smart" virus or a human infiltrator can defeat this test by resetting the file's date. I recommend that you add a commercial virus scanner, such as McAfee's Netscan, *to the weekly audit.*

Boxing With WordPerfect

I often need to put a box border around each page in a *WordPerfect* document. You can put text inside a *WordPerfect* box, but if you do, you won't be able to use certain editing features—Center Page, for instance. Also, you must create a new box for each page.

A better approach is to make the box part of your document's header, so it appears automatically on every page. *(continues)*

POWER TIP NO. 210

Easy Moves Between WordPerfect Tables

Use delete and undelete as a simple way to move information between tables that have identical numbers of rows and columns. Press <Alt>-<F4> or <F12> to turn on block mode, highlight the information you want to move, and press <Backspace>y to delete it. Move your cursor to the spot in the target table where you want to place the information. Press <F1>y to undelete the block and complete your move.

Troy Wagstaff
WordPerfect
Orem, Utah

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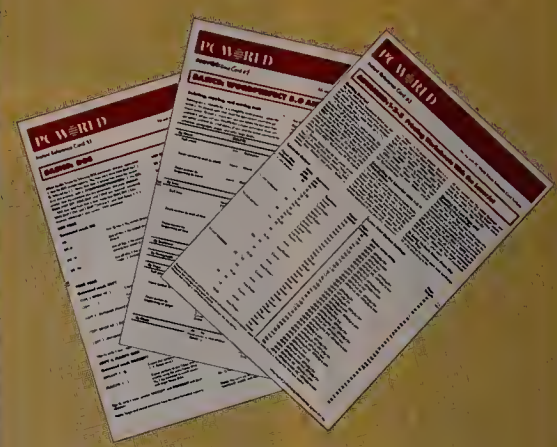

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Instant Reference Card #16

For use with PC World Instant Reference Card Portfolio

BASICS: WORD FOR WINDOWS

What to do: You can begin most *Word for Windows* tasks by clicking the left mouse button on a menu name and then on an option. Also, each selection has one letter underlined (bold here) that you can use to select it from the keyboard. You finish most tasks by clicking *OK* or pressing **<Enter>**.

USING MENUS

Task	Mouse	Keyboard
Open menu	Click on menu name	**<Alt>** or **<F10>**, type underlined letter in menu
Select option	Click on option	Type underlined letter in option
Another menu	Click on menu name	**<Cursor Left>/<Cursor Right>**
Close menu	Click off menu	**<Esc>**

GETTING STARTED

Create new document	**F**ile **N**ew
Open existing document	**F**ile **O**pen or **<Ctrl>-<F12>**, select directory and name
Set margins	Format **D**ocument, type size, margins
Set default font	Format **C**haracter, select font, size, style
Set indents and spacing	Format **P**aragraph, type indents, spacing
Add columns	Format **S**ection, type number of columns and spacing between

Fold Here

Save document	**F**ile **S**ave or **<Shift>-<F12>**
Save document with new name	**F**ile **S**ave **A**s or **<F12>**, type name
Print document	**F**ile **P**rint or **<Ctrl>-<Shift>-<F12>**, select number of copies, other options
Close document	**F**ile **C**lose or **<Ctrl>-<F4>**
Leave *Word for Windows*	**F**ile **E**xit or **<Alt>-<F4>**
Open Help index	**H**elp **I**ndex or **<F1>**
Get context-sensitive help	**<Shift>-<F1>** and click an object

ADDING CONTENT

Adding Text

Enter text	Click on starting place, type text
Start a new paragraph	**<Enter>**
Begin a new line	**<Shift>-<Enter>**
Begin a new page	**<Ctrl>-<Enter>**
Toggle insert/overtype	**<Insert>**
Add text from file	**I**nsert **F**ile, select directory and name
Add text from clipboard	**E**dit **P**aste or **<Shift>-<Insert>**

Adding Graphics

You can add charts or illustrations from the Clipboard or from a TIFF file to your document. Graphics with Dynamic Data Exchange (DDE) support (such as *Excel* charts) can be linked to data files and automatically updated.

Add graphic from file	**I**nsert **P**icture, select directory and name
Add graphic from Clipboard	**E**dit **P**aste or **<Shift>-<Insert>**
Add graphic from Clipboard with DDE link	**E**dit Paste **L**ink, check Auto Update for automatic or uncheck it for manual updating
Add blank picture frame	**I**nsert **P**icture, select **N**ew Picture
Size graphic	Select graphic, hold **<Shift>** and drag one of the corner or side handles
Crop graphic	Select graphic and drag one of the corner or side handles

Adding a Table

Create new table	Click at starting point, **I**nsert **T**able, type number of columns and rows

Adding a Table (continued)

Convert text to table	Select text, **I**nsert **T**able, select separator
Add contents to table	Click on or **<Tab>** to cell, type or paste contents
Add cells to table	Select cell below or to right, **E**dit **T**able, choose **R**ow or **C**olumn, **I**nsert
Delete cells	Select cells, **E**dit **T**able **D**elete
Convert table to text	Select rows to convert, **I**nsert **T**able, select separator

GETTING AROUND

The easiest way to get around is to click the mouse where you want to go. However, it is often quicker to use these keyboard shortcuts.

Move left/right a word	**<Ctrl>-<Cursor Left>/<Ctrl>-<Cursor Right>**
Go to beginning/end of line	**<Home>/<End>**
Go to top/bottom of window	**<Ctrl>-<Page Up>/<Ctrl>-<Page Down>**
Move up/down a paragraph	**<Ctrl>-<Cursor Up>/<Ctrl>-<Cursor Down>**
Move up/down a window	**<Page Up>/<Page Down>**
Go to beginning/end of document	**<Ctrl>-<Home>/<Ctrl>-<End>**
Go to page or bookmark	**<F5>**, type page number or type or select bookmark

Fold Here

SELECTING TEXT

Selecting From the Keyboard

You can select text, graphics, tables, paragraph breaks, page breaks, and other document elements simply by moving the cursor (the blinking, vertical bar, also called the insertion point or insertion pointer) to the beginning of the element, holding down **<Shift>**, and moving the cursor to the end of the element using the keystrokes described above in "Getting Around."

Select word or sentence or paragraph or section	Move within object, **<F8>** two or three or four or five times
Select column	Move to a corner, **<Ctrl>-<Shift>-<F8>**, move to opposite corner
Select whole document	**<Ctrl>-<NumPad 5>**

Selecting With the Mouse

Select contiguous elements	Move pointer to one end, press and hold mouse button, drag to other end
Select word (or words)	Double-click on word (and drag)
Select sentence	**<Ctrl>**-click on sentence
Select line	Click in left margin
Select paragraph	Double-click in left margin
Select column	Move to a corner, hold down *right* button, move to opposite corner
Select document	**<Ctrl>**-click in left margin

USING WINDOWS

Open new window on active document	**W**indow **N**ew Window
Arrange document windows	**W**indow **A**rrange All
Switch to a different document window	**W**indow, choose document

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Instant Reference Card #16

For use with PC World Instant Reference Card Portfolio

ADVANCED: WORD FOR WINDOWS

CHANGING THE VIEW

You can turn various views and several screen objects on and off (toggling).

Toggle draft view	**V**iew **D**raft
Toggle finished page view	**V**iew **P**age
Toggle outline view	**V**iew **O**utline
Toggle character ribbon	**V**iew Ri**b**bon
Toggle paragraph ruler	**V**iew **R**ulers
Toggle status bar	**V**iew **S**tatus bar
Toggle horizontal or vertical scroll bars	**V**iew Pre**f**erences, **H**orizontal or **V**ertical Scroll Bar

EDITING A DOCUMENT

You must select text before you edit it. You can use the icons in the Ribbon and the Ruler for some editing in addition to the commands below.

Rearranging Text

Copy to Clipboard	**E**dit **C**opy or **<Ctrl>-<Insert>**
Cut (remove) to Clipboard	**E**dit **C**ut or **<Shift>-<Delete>**
Paste from Clipboard	**E**dit **P**aste or **<Shift>-<Insert>**
Delete selection	**<Delete>** or **<Backspace>**
Delete next character (no selection)	**<Delete>**
Delete previous character (no selection)	**<Backspace>**
Delete next word (no selection)	**<Ctrl>-<Delete>**
Delete previous word	**<Ctrl>-<Backspace>**
Replace text or formatting	**E**dit **R**eplace, type old text and new text, select options
Repeat last operation	**<F4>** or **<Enter>**
Search for text or formatting	**E**dit **S**earch, type text to search for, select options
Repeat last search	**<Alt>-<Shift>-<F4>**
Set tab stops	Format **T**abs, type position, select options
Sort by paragraph	Select paragraphs to sort, **U**tilities **S**ort, change options
Sort by field	Select text to sort, **U**tilities **S**ort, change options, type field number
Sort column only	Select column, **U**tilities **S**ort, change options, select Column **O**nly
Undo last action	**E**dit **U**ndo or **<Alt>-<Backspace>**

Formatting Text

Center text	Format **P**aragraph **C**enter or **<Ctrl>-C**
Left-align text	Format **P**aragraph **L**eft or **<Ctrl>-L**
Right-align text	Format **P**aragraph **R**ight or **<Ctrl>-R**
Justify (right- and left-align) text	Format **P**aragraph **J**ustify or **<Ctrl>-J**
Bold text	Format **C**haracter **B**old or **<Ctrl>-B**
Italic text	Format **C**haracter **I**talic or **<Ctrl>-I**
Normal text	Format **C**haracter **N**ormal or **<Ctrl>-<Space>**
Underline text continuously	Format **C**haracter **U**nderline or **<Ctrl>-U**
Underline selected text	Format **C**haracter **W**ord underline or **<Ctrl>-W**
Double underline text	Format **C**haracter **D**ouble underline or **<Ctrl>-D**
Small capital text	Format **C**haracter Small **K**aps or **<Ctrl>-K**
Subscript text	Format **C**haracter Subscript or **<Ctrl>-=**
Superscript text	Format **C**haracter **S**uperscript or **<Ctrl>-+**
Select font	Format **C**haracter **F**ont or **<Ctrl>-F** **<Ctrl>-F**, select font
Select type size	Format **C**haracter **P**oints or **<Ctrl>-P** **<Ctrl>-P**, select size

Formatting Text (continued)

Set line spacing	Format **P**aragraph **L**ine, type size
Set paragraph specs	Format **P**aragraph, select or type specs
Set tabs	Format **T**abs, type position, select alignment and leader
Define styles	Format **D**efine styles, type new style and name, set formatting
Select styles	Format **S**tyle, select style

OUTLINING

With outlining you can plan and organize a new document, quickly reorganize an existing one, and format and number headings.

Apply style *n* to heading	Select heading, **<Ctrl>-S,** type **heading *n***
Toggle outline view	**V**iew **O**utline
Move selection below next heading	**<Alt>-<Shift>-<Cursor Down>**
Move selection above previous heading	**<Alt>-<Shift>-<Cursor Up>**
Move heading to next lower level (demote)	**<Alt>-<Shift>-<Cursor Right>**
Move heading to next higher level (promote)	**<Alt>-<Shift>-<Cursor Left>**
Display headings to level *n*	**<Alt>-<Shift>-***n*
Convert headings to text	**<Alt>-<Shift>-<NumPad 5>** (with Num Lock off)
Expand text under heading	**<Alt>-<Shift>-<Gray Plus>**
Collapse text under heading	**<Alt>-<Shift>-<Gray Minus>**
Toggle display of body text	**<Alt>-<Shift>-A**
Display first line of body text	**<Alt>-<Shift>-F**

Tip: You can create an outline of up to nine levels for an existing document by applying styles Heading 1 through Heading 9.

PROOFING

Check spelling for document	**U**tilities **S**pelling **S**tart, select command for each word not found in dictionary
Check spelling of word	**<F7>**
Check definition of word	**<Shift>-<F7>** or **U**tilities **T**hesaurus, view definitions
Replace word with synonym	**<Shift>-<F7>** or **U**tilities **T**hesaurus, select definition, select synonym, **<Alt>-R**
Hyphenate automatically	**U**tilities **H**yphenate, select location, select options
Add optional hyphen	**<Ctrl>-<Hyphen>**
Add nonbreaking hyphen	**<Ctrl>-<Shift>-<Hyphen>**

USING MACROS

Word for Windows' Macro Recorder records and stores multiple commands for repeated use. The only mouse movements the Macro Recorder recognizes, however, are command selections.

Record a macro	**M**acro **R**ecord, type macro name, select options, type a description, select OK, do what you wish to record, **M**acro Stop Recorder
Run a macro	**M**acro **R**un, select the macro
Assign a macro to keys	**M**acro Assign to **K**ey, select macro, press key combination, **A**ssign OK
Run a macro from keys	Type the keys you assigned to the macro
Edit a macro	**M**acro **E**dit, select macro and OK, edit, **<Alt>-<Hyphen>** **C**lose

Fold Here

Fold Here

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EXPOSITION & CONFERENCE
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Circle 129 on reader service card

By turning off the Wrap Text Around Box option, you can make text that's a regular part of the document, which you have more control over, *appear* to be in the box. Assuming you want 1-inch text margins all around, here's how to create the proper header:

At the top of your document, press **<Shift>-<F8>**, then select *Page Margins.* Type **.833** and press **<Enter>** twice. Then select *Headers Header A Every page* to get to the header editing screen.

Before you create the box, define its options. Press **<Alt>-<F9>** and select *Text Box Options.* At the resulting Option screen, set all four Border Styles to *Single* (or whatever you prefer) and Gray Shading to **0**. Press **<Enter>** to return to the header editing screen.

Next, create the box itself. Press **<Alt>-<F9>** and select *Text Box Create.* At the resulting Definition screen, set the Anchor Type to *Page,* leaving the Number of Pages to Skip option at 0. Type **VS.667** and press **<Enter>** to set the Vertical Position, **HS.8** and **<Enter>** to set the Horizontal Position, and **WN** to turn Wrap Text Around Box off. Press **<Enter>** to return to the header editing screen.

To exit the header editing screen, press **<F7>** twice. All the pages in your document will now be neatly boxed.

Miquel E. Gomez
Guatemala City, Guatemala

Editor's note: You may have to experiment to line up your boxes, text, and margins properly. Depending on your printer, WordPerfect's *vertical spacing can get tricky.*

You Don't Need *.*

This DOS tip may save you time when copying, renaming, or deleting files. When you want to DEL, ERASE, or COPY all the files in a directory, the name of the directory will suffice; you don't need to type '*.*'. The command **copy a:\ c:\wp** is equivalent to 'copy a:*.* c:\wp', while **del a:\temp** is equivalent to 'del a:\temp*.*'.

Shane Devenshire
Walnut Creek, California

Editor's note: These commands are equivalent as long as there's a directory by the specified name. But be careful: If you have files in subdirectories with similar names, a typo in this command can erase those files.

Brett Glass is a contributing editor for PC World.

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DEVELOPER'S TOOLBOX

BASIC Visualization

Brett Glass

Professional programmers wouldn't want to create their magnum opus in Microsoft's new *Visual Basic,* but if you're a weekend programmer or you're building simple utilities, the environment is ideal. It's also a great introduction to *Windows* programming.

Creating an application in *Visual Basic* is easy. First, you design windows and dialog boxes in a draw program–like environment. Then, you attach snippets of BASIC code—to be triggered by such events as mouse clicks and keystrokes—to the buttons and other objects. This system lets you build programs incrementally, using the internal debugger to test one subroutine before you work on the next.

Visual Basic's dialect is a "modernized" BASIC with true functions, procedures, and advanced control structures. (You can use line numbers and GOTOs if you want, but you're not obliged to.) Nonetheless, if you're converting an existing BASIC program, expect to perform some *major* surgery. Such classic and often-used features as DEF FN functions and the DATA statement are absent. Not surprisingly, you'll need to change the way your programs handle input and output—the old INPUT and PRINT statements weren't designed for a windowing environment.

Visual Basic's on-line documentation is a sterling example of what a Help system should be. In fact, the printed documentation's index often refers you to the on-line help. Borrowing from *Turbo Pascal,* it provides instant help on any keyword in your code and lets you paste sample code into your program. The tutorial is also first-rate. After viewing it, I created a simple program in about 15 minutes without once cracking the manual.

Alas, *Visual Basic* doesn't have what it takes to create a major application. For one thing, the compiled programs are large and slow. Although my 15-minute application compiled to less than 4K, it required a 270K run-time library module to execute. Furthermore, computation-intensive applications were noticeably slower than similar C or Pascal programs; and *Visual Basic*'s editing capabilities could be better. You can't view or edit more than one subroutine at a time, making it awkward to move or compare code.

I created this simple "Panic Button" application (with apologies to Douglas Adams) in less than 15 minutes after completing the Visual Basic tutorial.

Because it's easy to create a user interface in *Visual Basic,* you might want to use it for prototyping before writing an application in another language. But *Visual Basic* doesn't store your program's resources in a standard format, so you'll have to recreate your windows and dialog boxes with a utility such as the Resource Compiler or the *Whitewater Resource Toolkit.*

Visual Basic comes agonizingly close to being a real object-oriented language, but misses the mark by omitting vital object-oriented programming (OOP) capabilities. You can bind methods to the existing user-interface objects, but there's no way to create new classes. If you want ten red buttons that beep when they're pushed, you'll have to color each one individually and group them to share the beeping code—much clumsier than creating a "red beeping button" class. Instead, I'd recommend Borland's *Turbo Pascal for Windows* if you want real OOP functionality.

If you're new to *Windows* programming, or need to write quick and simple utilities, you'll thank your lucky stars for *Visual Basic.* But if you're ready to write that major application, you'll find better tools elsewhere.

WHERE TO BUY

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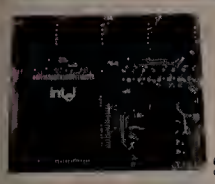

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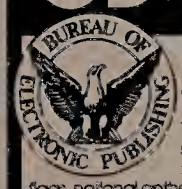

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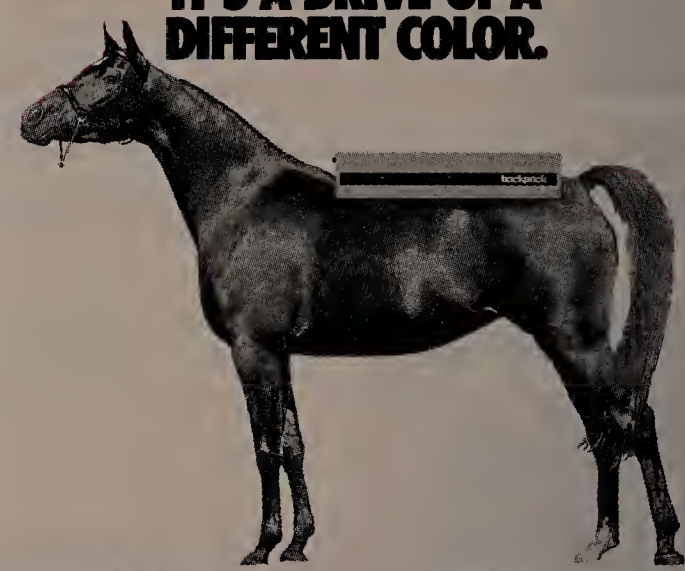

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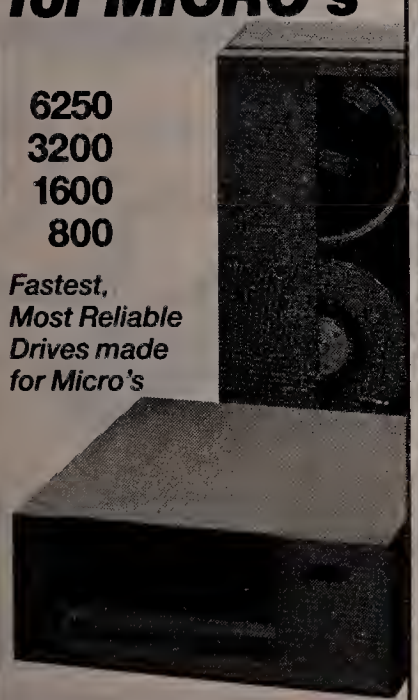

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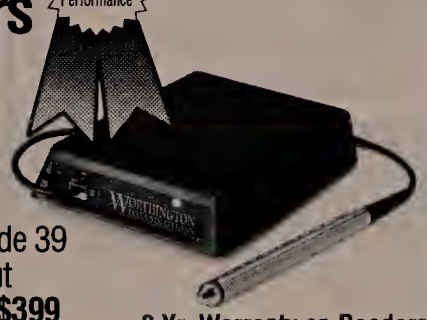

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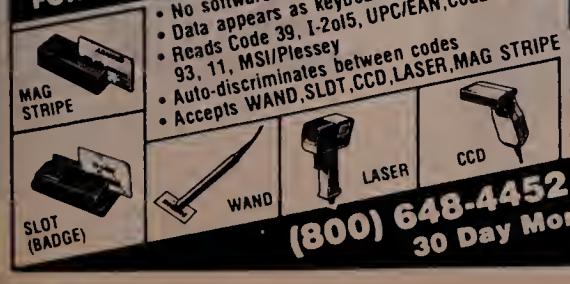

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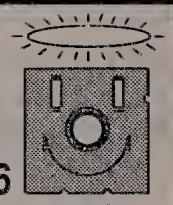

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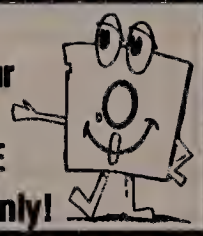

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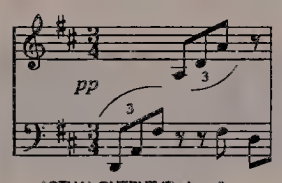

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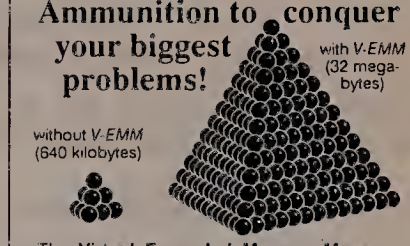

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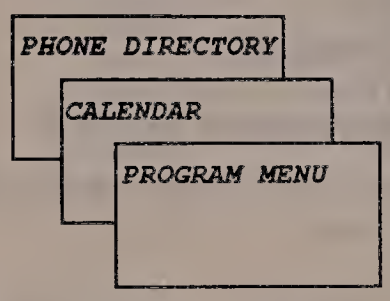

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Create single keystrokes for your most often used commands

Macro Power

At the heart of the Macintosh's user-friendliness is its use of pull-down menus to bring the various features of a particular software package under control of the mouse. While this use of menu items is easy and quickly learned, it is not the fastest way to call up frequently used commands. Some programs allow users to access some commands with keyboard equivalents (such as the standard Command-S to save a document).

Figure 1: The MacroMaker main dialog.

Once the program becomes familiar, most users begin to tire of having use the

are hidden. If you use an extended keyboard, you can assign one of the function keys to the job. But those of you with smaller keyboards can use another method such as one of the keypad keys or a key combination using the Command or Option keys. Be sure to use a combination not already used by RSG/DS.

It's a good idea to refrain from using the keypad keys so that when you open the Calculator desk accessory while running RSG/DS, you can use the keypad with no conflicts. If you use the keypad keys for macros, it is best to use them in combination with other keys to avoid launching a macro when you operate the Calculator.

Step by Step

To create a macro, first make sure that MacroMaker and Macros are installed in

Fine-tune pictures and add special effects

Picture Perfect!

Most DTP programs scale, stretch, rotate, and change a few attributes of graphics. RSG/DS have an entire integrated image processing utility for handling RIFF and TIFF images. The graphics Image Control dialog box (Figure 2) within the Edit menu is something that many people notice, but few ever use seriously. It is contains terms and concepts that many people never find a use for. At the least they shy away from modifying graphics for fear of ruining the picture. As you will see, experimenting with the Image Control menu can be rewarding, and anything you do can always be undone.

Figure 3: Brightness control darkens or lightens the image.

Figure 4: Contrast changes the threshold between dark and light.

10% gray, the displayed gray value of that pixel (output value) will also be 10%.

An important thing to remember is that no matter what image changes you make, you

INPUT OUTPUT
10% → 10%
20% → 20%
A: Normal Contrast
10% → 90%
20% → 80%
B: Negative Contrast

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QuarkXPress In-Depth

VOLUME 1, NUMBER 7

■ IN-DEPTH ■ APPLICATION ■

Careful planning is crucial to getting it right the first time

Planning to Print

by Neil Oliveria

Desktop publishing can streamline the production process, shorten schedules, and save money. These goals are realistic, but elusive. Inadequate planning can eat up valuable time and money. In a worst case, the imagesetting of a project can deteriorate to a trial-and-error fiasco, and the printing can produce a result that is far below expectations.

This article focuses on the process and pitfalls involved with imagesetting and printing the final document. The *printer* referred to is the person(s) responsible for reproducing the document – either an in-house printing department or an external service bureau. We will also explore some of the advanced printing controls for color and graphics in QuarkXPress version 3.

Spend Time... Not Cash

The first rule for successful printing is to know your printer! Review the job with your printer early in the development. Supply the printer with laser printed proofs and test sheets. Learn the limitations of your printer's equipment.

Review fonts, colors, paper size, trim requirements, layout registration needs, dot resolution, and the myriad of other options. Don't wait until a large job is completed to learn that the printer's screen font for Helvetica (or another font) is different than the one you've been using. Provide the printer with files for all downloaded fonts used by your project.

One of the most common pitfalls in

continued on page 6

Publish with Style

It is surprising that style sheets are not more widely used. They're easy. If you find that you are constantly switching back and forth between fonts and formats in a project, then a few minutes spent in setting up style sheets can save a lot of time and tedium.

Style sheets let you group a complete set of character and formatting attributes under a single style name. Then you can apply those attributes to paragraphs by using the style name or a special keyboard combination that you specify. For example, you can specify that the *first paragraph* in a story will use a drop cap, fixed leading, no indents, and a specific font and size. Whenever you start a new story, selecting the style name for *first paragraph* will set up the complete format with one step, ready for typing.

Style sheets are also powerful tools for making sweeping changes throughout a document. When you create a new style, you can *base* it on an existing style. Then, when you change the base style, all of the

continued on next page

Figure 1

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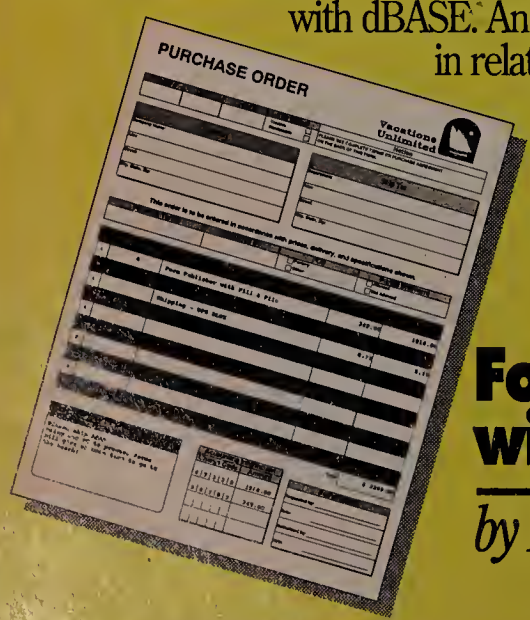

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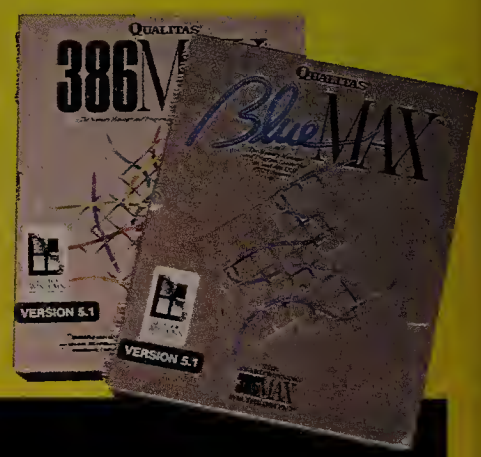

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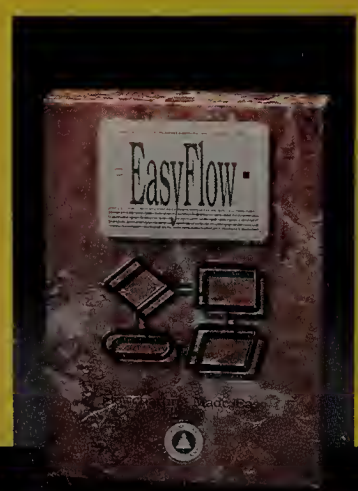

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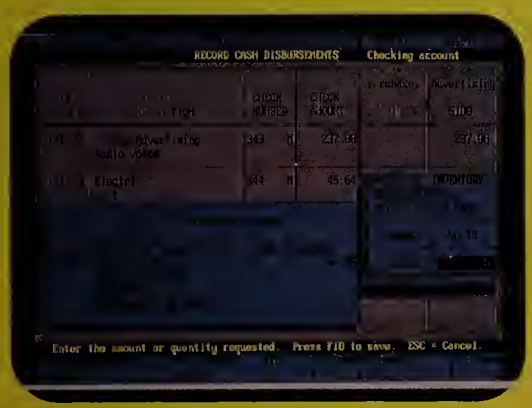

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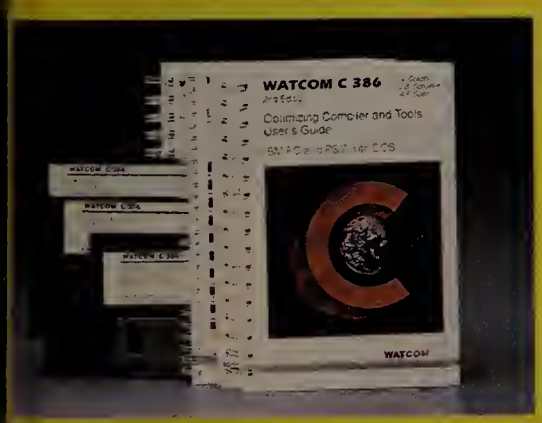

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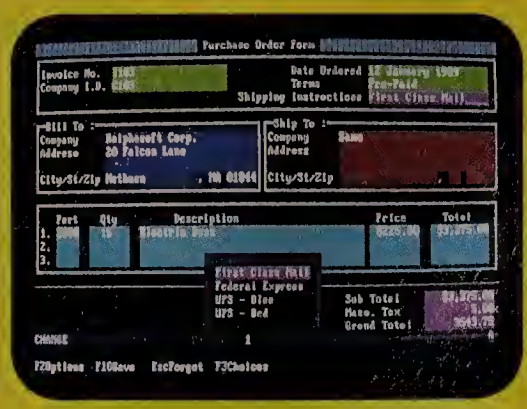

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Premium 486/25T, 25TE,	1Meg	500780-003	WPB	85.00
25, 25E, 33T	4Meg	500780-004	WPB	279.00
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	2Meg	ZA3800MG	139.00
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T1600	2Meg	PC8-PA8302U	125.00
T2000SX	1Meg	PC14-PA8316U	119.00
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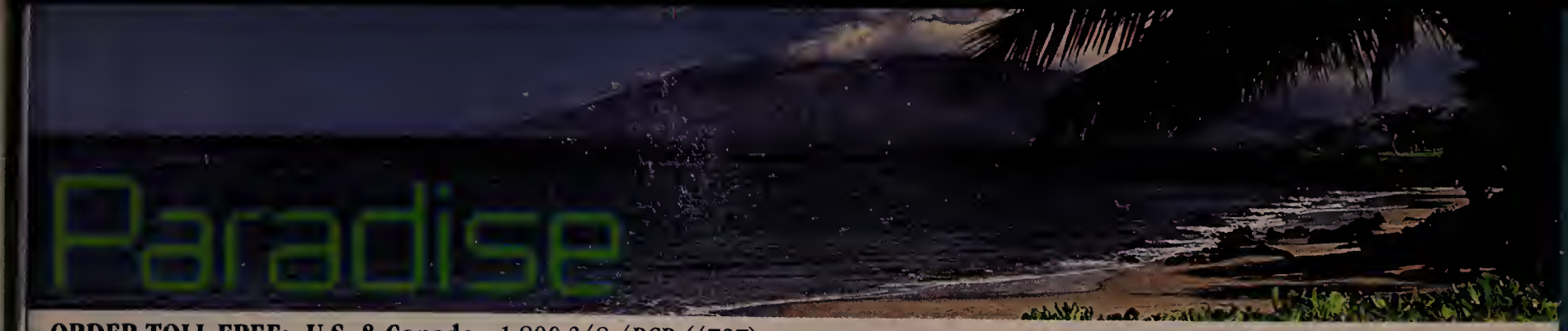

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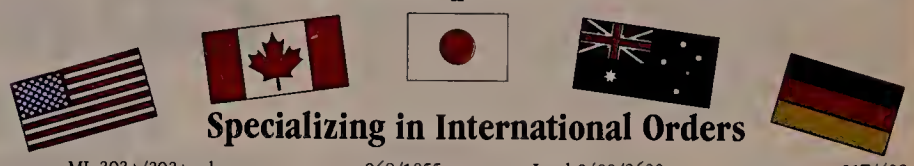

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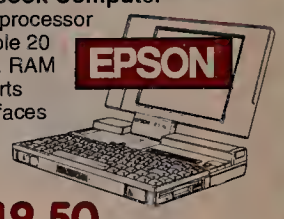

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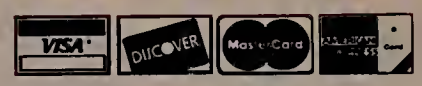

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A Complete 486™-33 MHz *EISA* System For Under $3,000.

HARD DRIVE 43MB INCLUDED

You are already familiar with MIS's great price on our fantastic 80386-33MHz system so, now, MIS remains on the forefront of leading edge technology with its 80486-33MHz EISA computer system!

And it's not just another 486™! MIS incorporates the Micronics motherboard with high quality components to offer the maximum PC at an affordable price. The MIS 486™-33 EISA supports 80486 CPU burst mode and EISA burst mode for maximum CPU performance and has up to 256K Cache buffer to satisfy DMA requirements on EISA architecture. It also supports up to 64MB of main memory on the motherboard.

Performing with 32 bit I/O power, the MIS 486™-33 EISA computer gives you RISC performance with ASIC architecture at a fraction of the cost. It is the ideal platform for UNIX/Xenix as well as high performance CAD/CAM applications.

MIS 486™-33MHz *EISA* STANDARD

- 1MB 80NS SIMM
- INTEL® EISA CHIPSET / PHOENIX® EISA BIOS
- 64K EXTERNAL SRAM CACHE
- WEITEK® MATH CO-PROCESSOR SOCKET
- TEAC® 5.25" 1.2MB FLOPPY DRIVE
- TEAC® 3.5" 1.44MB FLOPPY DRIVE
- 43MB AT HARD DISK DRIVE
- 2 SERIAL, 1 PARALLEL AND 1 GAME PORTS
- MGP ADAPTER
- SAMSUNG® 12" AMBER MONITOR
- MICROSOFT® COMPATIBLE SERIAL MOUSE
- NMB® 101-KEY ENHANCED KEYBOARD
- DESKTOP CASE WITH FIVE DRIVE BAYS
- 220W POWER SUPPLY
- ONE YEAR PARTS AND LABOR WARRANTY
- 30-DAY MONEY BACK GUARANTEE

$2,995

486-25MHz EISA STANDARD System	$3,595
486-33MHz ISA STANDARD System	$2,995
486-25MHz ISA STANDARD System	$2,595
386-33 MHz STANDARD System w/ 32K Cache	$1,995
386-25MHz STANDARD System w/ 32K Cache	$1,845
386-25MHz STANDARD System (Non-Cache)	$1,595
386SX-20MHz STANDARD System (Non-Cache)	$1,195
386SX-16MHz STANDARD System (Non-Cache)	$1,145
286-12MHz STANDARD System	$ 895

VGA (640x480) Upgrade	Add	$ 360
P-VGA (1024x768) Upgrade	Add	$ 450
80MB/105MB/212MB AT Hard Drive Upgrade	Add	$245/329/745
158MB/380MB/676MB ESDI Hard Drive Upgrade	Add	$745/1295/1895
RAM Upgrade	Add	$ 80/MB
64K Cache Upgrade (386-25/33 MHz)	Add	$ 50
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Mini Vertical Case	Add	$ 50
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MIS Computer Systems

P.O. Box 70897 Sunnyvale, CA 94086-0897

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Circle 172 on reader service card

FastData 386 Systems

FastData 386/33 $1899

The fastest 386 processor available combined with a 64K thirty nanosecond memory cache make the FastData 386/33 a power users dream! Included in the base price is a 105 megabyte 17millisecond hard disk, 1024 by 768 VGA monitor and card, four megabytes of memory, and 5.25" & 3.5" high capacity floppy drives. Plus, should anything ever go wrong with your FastData computer, you are covered by a one-year warrantee with free on-site service or system replacement if we cannot correct the problem with our FastSHIP advance parts replacement program.

Standard Features

- ✓ 33mhz Intel 386-DX processor.
- ✓ 64K high-speed memory cache.
- ✓ 4 megabytes high speed RAM.
- ✓ 105 mb 17ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis (shown) or mini-tower with speed, keylock and reset buttons.
- ✓ 387-DX coprocessor socket.
- ✓ 230 watt power supply.
- ✓ 14" Super VGA color monitor, 1024x768 resolution, with 16 bit VGA card with 1mb Video Ram.
- ✓ Clock calendar, parallel port, game port and two serial ports.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion& 5 drive bays.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ MS-DOS 5.0.
- ✓ Windows & Mouse add $69.
- ✓ FCC Class B approved.

386/DX33	80mb	100mb	200mb	660mb
Mono	$1,529	$1,599	$1,849	$3,199
Mono VGA	$1,629	$1,699	$1,949	$3,299
VGA 1024i	$1,829	$1,899	$2,149	$3,499
VGA 1024ni	$1,929	$1,999	$2,249	$3,599

FastData 386/25 $1699

The optimum combination of features, expandability, and power make the FastData 386/25 an ideal choice for those whose applications demand high speed 32 bit processing and expandability. The value of the 386/25 goes far beyond its price; it comes configured with a full four megabytes of fast RAM, a quick 18 millisecond 80 megabyte hard disk, and maximum VGA displaying 1024 by 768 resolution powered by a high-output 16 bit 1mb VGA board. Also, the FastMicro team will configure your FastData 386 exactly the way you want, without sending you shopping elsewhere.

Standard Features

- ✓ 25mhz Intel 80386-DX.
- ✓ 4 megabytes of high speed RAM.
- ✓ 80 mb 18ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25"and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis or mini-tower (shown) with keylock, speed and reset buttons.
- ✓ 80387-DX coprocessor socket.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor, 1024x768 resolution, with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and game port.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 slots & 5 drive bays.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ MS-DOS 5.0.
- ✓ Windows & Mouse add $69.
- ✓ FCC Class B approved.

386/DX25	80mb	100mb	200mb	660mb
Mono	$1,399	$1,469	$1,719	$3,069
Mono VGA	$1,499	$1,569	$1,819	$3,169
VGA 1024i	$1,699	$1,769	$2,019	$3,369
VGA 1024ni	$1,799	$1,869	$2,119	$3,469

FastData 486/25

Call about our hot 486, now just $2,399 with 4mb RAM, Super VGA & 100mb drive. Includes a 128K two-stage cache and is expandable to 64mb of memory.

All FastData Systems Include:

- 30 day money- back guarantee
- Toll-free technical support for life
- One year warrantee with on-site service available to most U.S. locations

FastData SX Systems

$1499 FastData SX/20

25% faster than a 16mhz SX, the FastData SX/20 adds even greater performance to its 386 multitasking capabilities. Just $200 more than our SX/16, this machine also includes an 80mb hard drive in addition to the super VGA color monitor and 16 bit VGA adaptor, Keytronics keyboard, DOS 5.0, and two floppy drives. The system includes two megabytes of memory and is expandable to eight on the main system board. Remember, when you have questions, need to solve a problem, or want recommendations on products for your system, the FastMicro team is standing by toll-free to provide product support for as long as you own your FastData personal computer.

Standard Features

- ✓ 20mhz Intel™ 386-SX processor.
- ✓ 2 megabytes of high speed RAM.
- ✓ 80 mb 18ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis (shown) or mini-tower with keylock, speed and reset buttons.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and game port.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots, 5 drive bays.
- ✓ 80387-SX coprocessor socket.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add $69.
- ✓ MS-DOS 5.0.
- ✓ FCC Class B approved.

386/SX20	40mb	80mb	100mb	200mb
Mono	$1,069	$1,199	$1,269	$1,519
Mono VGA	$1,169	$1,299	$1,369	$1,619
VGA Color	$1,319	$1,449	$1,519	$1,769
VGA 1024i	$1,369	$1,499	$1,569	$1,819

$1299 FastData 386/SX

Combine the benefits of an advanced Intel 386 processor, the value of a 286 and the advantages of FastData and you've got the FastData 386/SX! This machine is the choice of those who want to run today's powerful 386 and multitasking software, like Windows, and also want to run their favorite DOS applications at surprising speeds. We've made our customers' favorite options standard: it comes with an ample two megabytes of memory, a high performance 40mb hard drive, and 16 bit super VGA. Compare performance, features, and service and you will find no better SX value. Interested further? Try the FastData 386/SX for 30 days; you have to be happy - if not, we'll take it back.

Standard Features

- ✓ 16mhz Intel™ 386-SX processor.
- ✓ 2 megabytes of fast RAM.
- ✓ 40 mb 28ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard , mini tower, or mini desktop (shown) chassis with keylock, speed and reset buttons.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and a game port.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots, 5 drive bays.
- ✓ 80387-SX coprocessor socket.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add $69.
- ✓ MS-DOS 5.0.
- ✓ FCC Class B approved.

386/SX16	40mb	80mb	100mb	200mb
Mono	$999	$1,129	$1,199	$1,449
Mono VGA	$1,099	$1,229	$1,299	$1,549
VGA Color	$1,249	$1,379	$1,449	$1,699
VGA 1024i	$1,299	$1,429	$1,499	$1,749

FAST MICRO

For information or to order call:

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Circle 100 on reader service card

FASTMICRO Hardware 1-800-441-FAST

DISK DRIVES

Colorado DJ-10 40-120mb Int. Tape 239
DJ-20 80-240mb Int. Tape 299
Conner (see FastData IDE controllers at right)
CP3044 40mb IDE 28ms 199
CP3104 100mb IDE 25ms 349
CP3208 200mb IDE 25ms 599

Seagate 89mb AT Kit $319

IDE performance, big 89 megabyte capacity and Seagate quality make this kit a great buy. A 19ms access time and 5 mbps transfer rate assure great performance. Controller, cables and rails are included to make installation fast and easy.

Irwin SX Int. Tape 40-120mb / 80-250mb 249/349
SX Ext. Tape 40-120mb / 80-250mb 399/499
Micropolis
MC1664 340mb ESDI 14ms 1295
MC1598 1.2gb SCSI 14ms 2695
Plus Development
HardCard IIXL 50 - 52mb 9 ms 16bit 399
HardCard IIXL 105 - 105mb 9 ms 16bit 579

Toshiba 1.44mb Floppy Drive $59

Complete with mounting brackets and installation instructions, this Toshiba works in all true 286 & 386 compatibles. Will also read/write/format 720K 3.5" disks. Rails, add $5.

Seagate
30MB XT Kit ST238 w/ cont. 249
40MB AT ST251-1 MFM Drive 229
40MB AT ST157A 28ms IDE Drive 179
80MB AT ST296N SCSI Drive w/adaptor 319
89MB ST1102A 19ms IDE Drive 299
125MB ST1144A 19ms IDE Drive 399
210MB ST1239A 15ms IDE Drive 599
330MB ST2383E 16ms ESDI Drive 1199
Sun Moon Star Ext. CD-ROM Drive Kit 449
Teac
1.2MB 5.25" Floppy 65
1.44MB 3.5" Floppy 65

Toshiba 100mb IDE Kit $369

Upgrade your 286 or 386 to IDE technology and Toshiba quality at a FastMicro price. This kit comes with a fast 20ms 105mb drive and built-in 1:1 controller, 16 bit IDE card with dual floppy controller and cables, 5.25" brackets and rails.

Toshiba
360K 5.25" Floppy (Black) 59
1.2MB 5.25" Floppy 59
1.44MB 3.5" Floppy 59
65mb MK134 22ms RLL drive 279
100mb MK234FCH IDE 3.5" drive 349
Western Digital
WD93044 40mb IDE 28ms 199
WDAC280 80mb IDE 20ms 299
WDAP4200 200mb IDE 20ms 649
WE1007V-SE2 ESDI AT 1:1 dual controller 149

Sony CD-ROM Drive $379

Affordable CD-ROM technology is here! This player reads over 600mbs from just one CD and can even play your favorite audio CDs. This internal units works in 286 thru 486 PC's regardless of hard drive type and comes with cable & interface. Add an Encyclopedia, Book of Mammels or game CD for $49 each.

BOARDS

Artisoft/Lantastic
Lantastic 2mbps Starter Kit - Two Station 349
Lantastic 2mbps Adaptor 139
Lantastic Ethernet Starter Kit - Two Station 499
Lantastic Ethernet Adaptor 209
ATI
2400 ETC Internal / External ....129 / 159
8514/Ultra+VGA 1mb 599
9600/E External MNP V.42bis 369
VGA Basic 16 75

Sound Blaster $149

Sound Blaster does for sound what VGA does for graphics! Supported by the largest software library, Sound Blaster make your games come to life. Also includes a music synthesizer, voice input and sound compression, and MIDI interface. SB Talker even converts text into spoken English. Includes a game port also.

VGA Wonder + 256K / 512K ....159 / 189
VGA Wonder XL 256K / 1mb ....159 / 269
Brown Wagh Sound Blaster 149
Everex
2400B Int Modem 69
EGA 480 Card 69
RAM3000 16 bit - w/ 0K, add $60/mb max 3mb 75
RAM8000 16 bit - w/ 0K, add $60/mb max 8mb 169
Hayes
JT FAX 4800B Internal 139
Personal Modem 2400 w/Prodigy 119
Hercules Graphic Card + ...169
Intel
Classic 2400 Modem Int. / Ext. ....139 / 169
Satisfaxtion Classic - Internal 9600 379
287XL 85
387-DX25 or 33 209
387-SX16 / 20 ....129 / 139
Logitech
ScanMan 32 / Catchword Bundle ....165 / 199
Scanman 256 for Windows 279
Orchid
ProDesigner II 1mb 279
Tiny Turbo 286 129
Tiny Turbo Xtra 269

ATI 9600ETC•E $369

ATI delivers speed and accuracy with the 9600 Etc•E! It includes V.42, LAP-M, and MNP error correction combined with MNP/5 and V.42 bis data compression to provide total high speed throughput. It features automatic line speed correction, synchronous/asynchronous communication and automatic feature negotiaton with connecting with other modems.

Paradise
Basic VGA - 8 bit 99
VGA 1024 256K/512K ....149 / 179
Practical Peripherals
2400B Int Modem 125
2400B Int with MNP 159
PM9600SA Ext. V.32/V.42bis 449
USRobotics
2400 Sportster Int / Ext. ....119 / 135
2400 Sportster MNP Int / Ext. ....159 / 189
Courier HST 14,400 Int. / Ext. ....539 / 579
Courier HST 14,400 Dual Standard Ext. 839
Video 7
VGA 1024i 256K / 512K ....159 / 189
V-RAM II VGA 512K 339
ZOOM
HC2400 Internal 69
2400 V.42bis External Modem 159
9624 Send/Receive Internal Fax Modem 119

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MONITORS

Mitsubishi
1410 EGA 325
Diamond Scan 1381 499
NEC
Multisync 2a 469
Multisync GS 2a 199
Multisync 3d 629
Multisync 4d 949
Panasonic C1381 VGA 369
Seiko CM1440 / 1450 ....499 / 639
Sony 1304 Multiscan 669
Zenith 1492 599

FastData Products

FastData 16 Bit VGA

The FastData 16 bit VGA card features 256K of video memory, does CGA, EGA, & VGA up to 1024x768 and comes with drivers for popular software including Windows 3.0. It's expandable to 512K and has a 30 day money-back guarantee.

$79 256K vers.
$99 512K vers.

FastData 16bit 1mb VGA 119
FastData CGA Card 35
FastData MGP Card 29
FastData Parallel/Dual Serial/[illegible]rd 29

FastData 2400 Baud Internal Modem

$59 The FastData 2400 baud internal modem is fully Hayes compatible and can be configured to COM port 1-4. It has an internal speaker, is auto answer & auto dial, and comes with communications software.

9600B SendFax w/ 2400B Modem [illegible]
9600B Send/Receive Fax w/2400 [illegible]
IDE 16 Bit 1:1 Hard/Floppy Disk Cont. [illegible]
RLL 16bit 1:1 Hard/Floppy Disk Cont. 59
XT 1.44 Dual Floppy Controller 35

FastData Monitors

Your best value, guaranteed! We have a full line manufactured for us by manufacturers like Hyundai and Matsushita (Panasonic). As with all FastData branded product, you get a full 30-day money back satisfaction guarantee. Shown is the VGA color.

FastData Monitors
14" Amber or White Monochrome 99
14" White VGA Monochrome 119
14" CGA Color .52 dot pitch 199
14" VGA Color .31 dot pitch 279
14" Super VGA 1024 x 768i .28 dp 319
14" Non-Int VGA 1024 x 768 .28 dp 429

PRINTERS

Canon BJ10E 319
BJ300 / BJ330 ....459 / 599
Citizen
200GX / GSX-130 ....189 / 249
GSX140+ / GSX145 ....295 / 395
Fujitsu DL3400 359

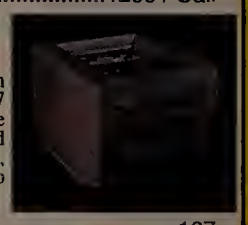
Citizen GSX-140+ $299

The new version of the best-seller! It now comes with 8 resident fonts, paper parking, and a two year warrantee. It does up to 220 CPS and has a new enhanced LCD control panel that lets you set everything without DIP switches. Upgrade to color anytime for just $45.

NEC
P3200 269
P3300 369
P6200 / 6300 ....469 / 629
OKIDATA Okilaser 400 669
Panasonic
KXP1180 155
KXP1123 239
KXP1124i 299
KXP1624 379
KXP4420 Laser 829
KXP4450i / 4455 Lasers ....1299 / Call

Texas Instruments MicroLaser PS17 $1199

PostScript laser printing has never been so affordable before. The TI PS17 includes 1.5mb of memory, genuine PostScript by Adobe, and 17 standard fonts including Times, Helvetica, Courier and Symbol. It handles paper up to 8.5 x 14 and envelopes too!



Seiko Smart Label Printer Plus 167
Star
NX1001 149
NX1500 299
NX2410 / 2415 ....249 / 369
XB2410 / 2415 ....419 / 539
Texas Instruments Microlaser PS17 1199
Microlaser PS35 1499

FastData 286/12 $699

Imagine a fast 286 computer at a super price and you've got the FastData 286/12. This system is complete, not stripped. You get one megabyte of zero-wait-state memory and a 28ms IDE hard disk - standard. Also included is an amber monitor and graphics card, your choice of a high density 1.2mb or 1.44mb floppy drive and a KeyTronic keyboard. And since its a FastData, you are backed with toll-free technical support, one year warranty with the FastShip replacement program & on-site service plan, and our 30 day full money back satisfaction guarantee!

- ✓ 12mhz 80286 processor.
- ✓ 1 megabyte RAM.
- ✓ 40 mb 28ms IDE hard disk 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive (2nd drive add $59)
- ✓ Standard chassis (shown)
- ✓ Five drive bays.
- ✓ 200 watt power supply.
- ✓ Math coprocessor socket
- ✓ Monochrome monitor with monochrome graphic board.
- ✓ Clock calendar, parallel port, game port, & 2 serial ports.
- ✓ KeyTronic enhanced 101 keyboard.
- ✓ 8 expansion slots, 6 available.
- ✓ MS-DOS 5.0.
- ✓ Full documentation.
- ✓ FCC Class B approved.

286/12	40mb	80mb	100mb	200mb
[illegible]	$699	$829	$899	$1,149
[illegible]	$799	$929	$999	$1,249
[illegible]	$949	$1,079	$1,149	$1,399
[illegible]	$999	$1,129	$1,199	$1,449

FASTMICRO Software 1-800-441-FAST

DATABASE & FORMS

askSam 5.0 209
Avery List & Mail Plus 37
Clarion Personal Developer 45
Clarion Professional Developer 449
Clipper 5.01 489
DataEase 459
dBase III+ 439
dBase IV 479
dBXL Diamond 129
Formbase 299
FormTool Gold 52
Formfiller 85
Foxbase Plus 179
FoxPro 2.0 449
Paradox 3.5 489
Per:Form Designer & Filler 89
Personal Rbase ....Call
Q & A 214
RapidFile 99
Rbase for DOS 447
Reflex 159

PerFORM PRO $149
for Windows

PerForm Pro has all the advanced features for designing, managing, filling, and printing high-end forms. By splitting the functions of designing and filling forms into separate Designer and Filler modules, PerForm Pro lets you maintain control of form design while you distribute form filling to every work station that needs it. Includes, advanced security features, database links, multi-page forms, calculated fields, pre-designed templates and more.

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Adobe Postscript Cart. for HPLJ-II 299
Adobe TypeSet 1 or 2 57
db Publisher Professional 389
Express Publisher ....Call
Pagemaker 4.0 489
PFS:First Publisher 89

PageMaker 4.0 $489

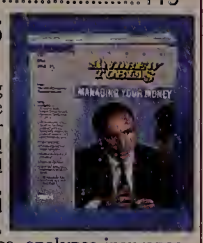
The top desktop publishing software for Windows just got better. Version 4.0 adds story editor, a built-in word processor and spell checker. PageMaker's advanced text manipulation and color design tools gives your publications a professional look. New Table Editor lets you create dynamically linked tables and graphics can flow automatically with text. Also includes Adobe Type Manager for Windows as a bonus.

Printshop 33
Publisher's Paintbrush 279
Publish It! 129
Ventura Publisher Gold / Windows 519

FINANCIAL

ACCPAC BPI Value Pak 359
ACCPAC Simply Acctg.for Windows 119
Bedford Integrated Acct. 119
DAC Accounting 4.1 79
DAC Bonus Pack 4.1 119

Managing Your Money $115



Andrew Tobias Managing Your Money is the one personal financial manager that does it all! It writes and prints checks, organizes and tracks income and expenses, manages payables and receivables, prints invoices, organizes and estimates taxes, analyzes insurance needs, tracks & amortizes loans, manages your stock portfolio and more. Plus, it includes an electronic rolodex & appointment schedule and can export data to 1-2-3 and tax prep programs.

Dollars & Sense 55
Managing Your Money 115
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One Write Plus G/L, A/P & A/R 165
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Peachtree Complete III 139
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3-D Charts to Go for Windows 55
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Design CADD 3-D 185
DrawPerfect 259
Freelance Graphics 4.0 299
Generic 3D Drafting 199
Generic Cadd Level 2 Starter Kit 89
Generic Cadd 5.0 279
Harvard Graphics 299
PC Paintbrush IV Plus 109
Perspective Jr. 69
PFS:First Graphics 89

Visual Basic for Windows $125

You've heard about it, now you can take advantage of this powerful and easy to use development system for Windows. Microsoft's Visual Basic contains a pallet of visual tools to design and develop true Windows applications. It includes an interpreter to run your applications as you develop them and a compiler to turn them into royalty-free .EXE files. Also includes debugging tools and sample applications you can modify.

We Ship Air at Ground Rates.

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First Choice 95
Framework XE 95
Geoworks Ensemble 115
LotusWorks 89
SmartWare II 417
Symphony 2.2 489
Works 89

MICE/INPUT

Key Tronic 101 Keyboard 59
Key Tronic Professional Mouse 59
Logitech Mouseman Serial righthand 65
Logitech Mouseman Serial w/Windows 127
Logitech Mouseman Bus righthand 76

Logitech MouseMan Serial $65

Logitech's MouseMan is the next step in mouse evolution. Specifically tailored in right or left hand versions, it provides maximum comfort and 400 DPI hardware resolution. Includes MouseWare utilities and Lifetime Warranty. Specify right or left, for PaintShow, add $15.

Logitech Mouseman Cordless 129
Logitech Trackman Serial 75
Microsoft Serial or Bus Mouse only 83
Microsoft Serial or Bus w/ paint 95
Microsoft with Windows 3.0 147
Z-Nix Serial Mouse w/Windows 3.0 89

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Visual Basic for Windows 125
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SPREADSHEETS

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Lotus 1-2-3 version 2.2 325
Lotus 1-2-3 version 3.1 399
Lucid 3-D 53
Quattro Pro 3.0 Upgrade 119
Supercalc 5D 89

Lotus 1-2-3 2.3 $325

The powerful spreadsheet that runs on any PC. New WYSIWYG display, mouse support, 200 graph types, drawing tools and other graphics features to make spreadsheet publishing a breeze. Release 2.3 also adds auto-compress printing, auditor, file viewer, context sensitive help, print preview and more. Call us for upgrade information too!

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Facelift for WordPerfect 57
Grammatik IV 55
LetterPerfect 119
Multimate 4.0 267
Professional Write 159
Publisher's PowerPak / WordPerfect ....call
Rightwriter 55

WordPerfect 5.1 $239

WordPerfect is the #1 rated word processing software. Its got almost every feature imaginable and yet it is easy to use. The current version adds pull-down menus, mouse support, table creation and equation editor. Add this to the best software support in the business and you can't go wrong!

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Word 209
Word for Windows 299
Word Perfect 5.1 239
Word Perfect for Windows 269
Word Perfect Add'l Station 159
Word Perfect Office 89
WordStar Professional ....Call
Writer's Toolkit 79

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Adobe Type Align (req. ATM) 59
Adobe Type Manager 59
Adobe Type Manager Plus Pack 115
After Dark for Windows 25
Ami 115
Ami Professional 287
Asymetrix Toolbook 279
Bitstream Facelift 57
Corel Draw 2.0 359
DBfast/Windows 239

Excel 3.0 for Windows $299

The best graphical spreadsheet now includes Toolbar, which puts frequently used commands a single mouse click away. New Q + E lets you access remote databases & Best Fit automatically resizes columns to display longer cell widths. 3-D charts, clip art support, and button macros are included too! Call us on how you can upgrade from your current spreadsheet for only $129.

Excel 299
Form Publisher 139
Grammatik IV for Windows 55
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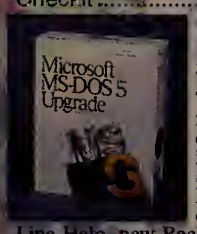

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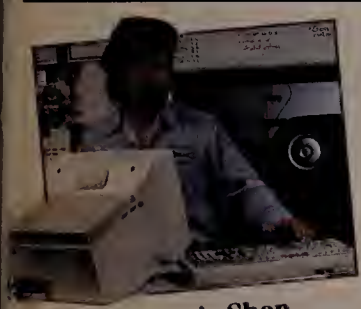

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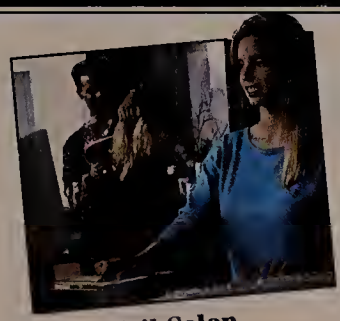

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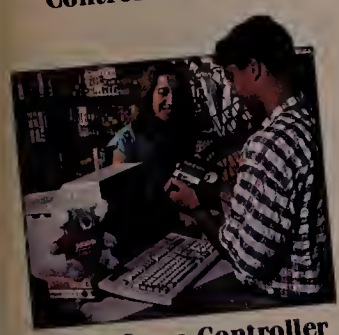

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Steve Bass

If you're like me, you have an older, slower computer at home that could use a boost. You can speed it up by dropping more than a few bucks on hardware upgrades, or you can use some relatively inexpensive programs to better use existing memory and storage.

Sad but true, your computer's performance can degrade over time—at least, your hard disk will. As files are deleted, DOS adds portions of new ones to the old spaces. Files become fragmented and your disk gets cluttered. While there's no loss of data integrity, it takes substantially longer to read and write fragmented files than contiguous ones. Hard disk optimization software quickly glues your files back together.

Just follow the menu prompts or create a batch file to run the defragger from the DOS prompt. It takes less than 3 minutes if you do it regularly, depending on how many files you've added and deleted. But of course, it takes longer to follow the menus through the first time. Using Norton's *Speedisk*, it took me 20 minutes to optimize a Plus HardcardII XL with 90MB of very fragmented data.

Unfortunately, even the new DOS 5.0 is about as smart as an artichoke when it comes to keeping files in a group. I optimize my entire hard disk every week and use *Speedisk* in a housekeeping batch file called DISKLEAN.BAT that I run from the DOS prompt.

First I make sure I'm not running *Windows* or a disk caching program. This is *very* important. Because defragmentation moves files from one spot to another, you shouldn't defrag while a caching program is active. And don't even *think* of optimizing your disk while in *Windows* or another multitasking environment. Moving files around while another application tries to write is a one-way ticket to scrambled data. You *must* move files from a DOS prompt.

COCO MASUDA

But don't discount disk caching—it's another easy way to speed up a slow computer. Caching software relies upon the fact that the files we use change only incrementally; so it sets aside some memory to store frequently used data. When, as happens over and over while you work, you ask for the same data again, you get it more quickly from memory than from the slower hard disk. Disk caching provides an immediate and dramatic difference in the way your computer performs.

Most people have at least a megabyte of memory but are only using 640K. A caching program makes use of that wasted memory, while reducing the wear and tear on your drive caused by frequent reads/writes.

DOS and *Windows* both come with the SMARTDRV.SYS cache, but it's not nearly as flexible or intuitive as commercial products. I prefer the disk accelerator in Multisoft's *PC-Kwik Power Pak* for my older, slower XT at home. Multisoft claims speed improvements of 10 to 50 percent, depending on the application. It feels like more to me. The *PC-Kwik Power Pak* includes several other speed boosters, such as a RAM disk and a print spooler. They all work in unison, so when the print spooler needs memory, it "borrows" from the cache and "returns" memory when it's finished. Pretty slick.

If $130 is too great a commitment for you—even discounted to $75 on the street—the shareware package *HyperDisk* lets you try before you buy. You can find it on BBS's and in user-group libraries.

With just a little work and not a lot of money, you can make your computer a leaner, meaner, and faster machine.

Contributing Editor Steve Bass is a family therapist and president of Pasadena IBM Users Group.

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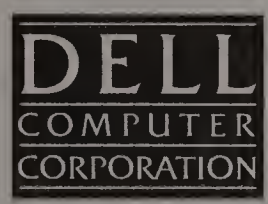

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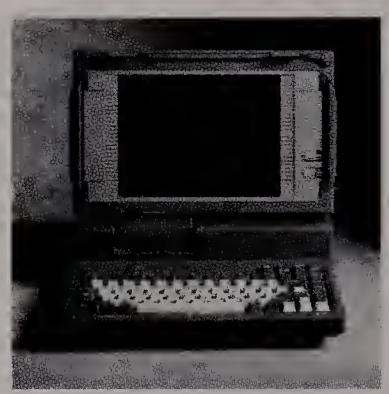

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